American Aviation

The Air Industry's Pioneer Independent Magazine **APRIL 1, 1950**

Suppose It's Tomorrow

SUPPOSE TOMORROW should turn out to be M-Day. What happens then to the airlines and what will the military use for transport airplanes?

The answer to these two questions is the subject of a lot of top thinking these days, but if M-Day should come anytime in the near or foreseeable future, the transport airplane shortage (or deficit, as they now choose to call it) would be critical in the extreme.

by W. W. P.

Even if the military should requisition every four-engined airplane now in airline service—an event that would seriously injure the domestic economy—the military would still not have nearly enough long-haul equipment to meet its needs.

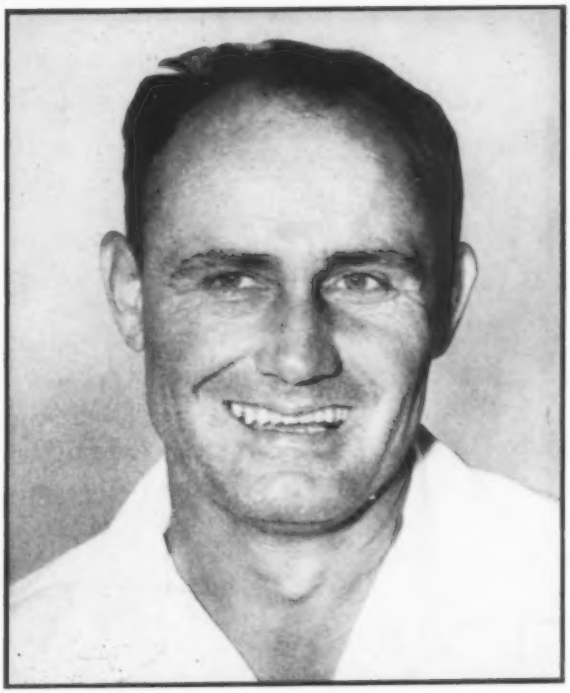
How to assure a larger air transport capacity for the national defense without prohibitive cost and without disrupting civil air transportation is not an easy problem to solve. But some practical and realistic recommendations were presented with exceptional clarity recently to the Senate Committee on Interstate and Foreign Commerce by Robert Ramspeck, vice president of the Air Transport Association.

There are just three alternatives, Mr. Ramspeck told the Senate committee but reliance on any single one of these alternatives is impractical. The solution to larger capacity rests with a combination of all three. And here they are:

1. *Increase the number of planes in airline service.* But since there are now less than 600 four-engined aircraft in service, the increase would have to be very great to meet military requirements, so great, in fact, that the civil air transport system would be thrown entirely out of gear and the need for government financial support would be greatly increased. But there are steps that can be taken, such as the stepping up of the SC-31 navigation and traffic control program, which would permit increased and more reliable scheduling; routing long-haul first-class mail and parcel post by air, and permitting air carriers to participate more freely in the carriage of government traffic, which would increase steadily the size of the civil air transport fleet without economic dislocation.

2. *Increase the size of the operating fleet of the Military Air Transport Service.* If MATS were permitted to expand sufficiently in peacetime to the

(*Turn to page* 8)



Wins Engineering-Maintenance Award

Robert L. Fulton, a lead mechanic in the engine change department of Eastern Air Lines at Miami, Fla., has been selected as winner of AMERICAN AVIATION's first annual Engineering-Maintenance Award in recognition of personal contribution toward improved airline maintenance during 1949. He joined EAL as an airline mechanic trainee in September, 1942. (See story on page 14.)

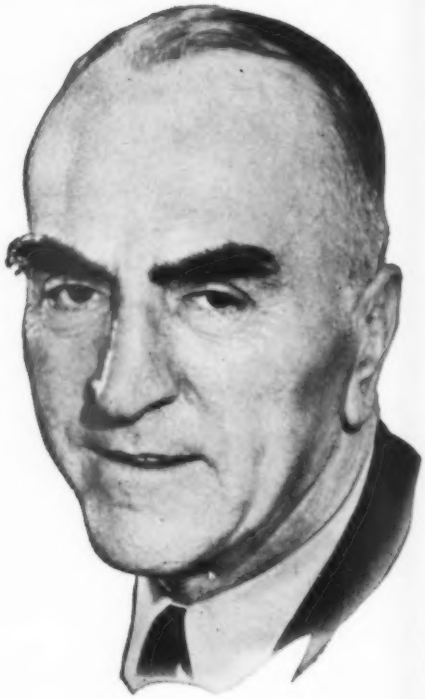
In This Issue

TO EVERY SPARK PLUG USER!

CAPT. EDDIE RICKENBACKER VOLUNTEERS THIS AMAZING STORY ABOUT CHAMPIONS!

President and General Manager of Eastern Air Lines Credits *SAME SET OF DEPENDABLE CHAMPIONS* with 240,000 Miles of Air Travel!

Actual photo of one of the Champions cited above and gold-plated by Capt. Rickenbacker as a souvenir.



"THIS SPARK PLUG is one of the set of thirty-six (36) which operated in the #4 engine #75737 in Eastern Air Lines' new type Lockheed Constellation #115A for 811 consecutive hours of trouble-free operation. This amount of operating time, which is most unusual, based on an average cruising speed of 300 MPH, is equal to approximately 243,000 miles, or almost ten times the distance around the world at the Equator, and during this period the spark plug fired approximately sixty million times. This type of service from a spark plug is remarkable even when compared to the type of operation as recent as a year ago. Also, to its credit can be added that during its life it was one of the spark plugs (none of which were changed) that helped carry myself and party on our Latin American Tour during August of 1949."

Eddie Rickenbacker

All Champion Spark Plugs, regardless of type or purpose, are products of the same unequalled research engineering and manufacturing facilities. As a result, the same qualities of outstanding performance and dependability, so dramatically demonstrated above, are inherent in every Champion, for every engine!

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CHAMPION
SPARK PLUGS

CHAMPION SPARK PLUG COMPANY, TOLEDO 1, OHIO

Listen to the CHAMPION ROLL CALL . . . Harry Wismer's fast sportscast every Friday night, over the ABC network

BACKGROUND & TRENDS

Among the Airlines

A million dollar offer for National Airlines' Miami-Tampa-New Orleans route was made several months ago by Capt. Eddie Rickenbacker, president of Eastern Air Lines, but was refused, says G. T. "Ted" Baker, NAL president . . . Los Angeles traffic men say that **$110 transcontinental coach** flights of TWA and American are attracting a "middle class" market. There's no sign that any large number of passengers are being diverted from regular schedules, but similarly there's no sign that business is being taken from the $88 and $99 non-skeds. Spasmodic checks show half the riders are women. There's very little business travel. How big this middle class market is, remains to be seen . . . United Air Lines' annual report shows how the **cost of airline operations** has increased. In 1929, National Air Transport, UAL predecessor, had net income of $2,819,000 on total operating revenues of $7,810,000, while UAL's 1949 net of $2,249,000 was on total revenues of $91,553,000. Significantly, UAL's mail revenue last year ($7,071,000) was less than NAT's 1929 mail pay of $7,481,000 . . . **Capital Airlines has big ideas** for 1950, and has set $30 million as its goal for non-mail revenues. The 1949 goal was $20 million and was exceeded by $2 million. Capital expects to be in the black for 1950 by Apr. 15, leaving it better than eight months to pile up profits . . . Post Office Dept. believes that, in the interest of "economy and efficiency," **West Coast Airlines should consider a merger.** A WCA-Southwest Airways merger has been practically set for several months but hasn't been formally announced. PO also thinks WCA's route north of Seattle should be discontinued . . . The long drawn-out proceedings in the proposed **Pan American-American Overseas merger case** have finally been completed and the case is now in CAB's hands for decision. The decision must receive Presidential approval . . . **Seventeen airlines have told** the Senate Interstate and Foreign Commerce Committee that they endorse legislation authorizing CAB to make a "thorough and objective" study to determine whether separation of mail pay and so-called subsidy is feasible and "how it may be accomplished equitably and without jeopardy to the most efficient and largest privately-owned and privately-operated air transportation system in the world." Airlines are All American, Bonanza, Braniff, Capital, C&S, Colonial, Delta, Empire, Mid-Continent, Northwest, Northeast, Piedmont, Pioneer, Robinson, Turner, Southern and Southwest.

Military Discount Out

The airlines aren't going to be interested in giving the military a 10% discount on air travel during the next fiscal year, as they have in 1950, unless they're on an equal competitive basis with the railroads. Robert Ramspeck, executive vice president of Air Transport Association, made this amply clear recently when he said the airlines aren't "going to be interested in paying 10% of their revenues for any more 'compromises'." The railroads, up to this fiscal year, had had practically an "exclusive" on military travel. When the airlines offered a 10% discount for 1950, the rail agreement was changed, but was still preferential, and the airlines' share of the business has not been nearly up to expectations. The airlines will renew the agreement if they're allowed free and open competition for military traffic.

Non-Sked Boom to Miami

Just how well the non-scheduled air carriers did on the Miami route last year has been revealed for the first time. The Dade County Port Authority says the non-skeds carried 76,211 domestic passengers in and out of Miami in 1949, and Walter Sternberg, vice president-sales of National Airlines, estimates that 60,000 of them traveled New York-Miami, accounting for 60,000,000 passenger-miles. At 4c a mile coach fare, the scheduled lines would have collected $2,400,000 from these passengers. Scheduled lines' coach services are reported cutting into the non-skeds on the route, but it's still a good guess that the non-skeds hauled 15,000 in and out of Miami in January.

Minimum Wage Decision Expected

Early April will see decision by the Secretary of Labor on **proposals to raise wage minimums** in the aircraft industry covering government contracts. The industry can't obtain a definition of the scope of coverage, and component parts manufacturers, whose government aviation work is only a small part of total output, are concerned. They reason that upward adjustment of minimums, even though covering only government contracts, will force up wages on non-government work.

CAB Clamps Down

The Civil Aeronautics Board has clamped down on its former members, officers or employees **using knowledge gained while with the Board** to the advantage of a client, employer or himself in a formal hearing. Previously the restriction was for six months following termination and then only if the case involved was pending prior to termination. New rules say that such a person can't appear "at any time" in a case which he had handled or passed on while with CAB; that any person in a CAB hearing can't accept assistance from or share fees with a former CAB associate who is banned from appearing; that a person formerly associated with CAB can never use in a hearing confidential material that came into his possession while with CAB, without first getting CAB's permission. A former CAB associate can appear in a hearing within six months provided he had nothing to do with the case while with CAB, and provided he gets Board approval.

O'Connell Predicts

CAB Chairman Joseph J. O'Connell, Jr., made some **predictions about the airline industry** recently. Among them: it's not unreasonable to predict that within the next five to 10 years a majority of long-haul common carrier transportation (over 1,000 miles) will be by air; air will capture an increasingly large volume of the total international market; helicopter service around metropolitan areas shows promise but must await development of a passenger helicopter; the near future of air cargo appears to be as a supplementary service to surface transport. Lower freight rates have stimulated business but there's some doubt whether they're compensatory to the carriers, he said, adding that they can either be raised slightly or held at present levels in expectation that volume will make them compensatory. CAB will continue experimental promotional fares, but the number will probably be reduced and standardization should be achieved on a few of the most effective, he stated. Regular air coach service should be conducted under a certificate of convenience and necessity by existing certificated carriers or by newly certificated carriers among the present group of large irregulars, he noted. On feederline mail pay, he predicted this year's bill will be $15 million but that thereafter it will decline considerably due to (1) possible elimination of lines showing no chance of becoming reasonably self-sufficient, and (2) development of heavier traffic loads.

"SHE'S A FINE JOB TO SERVICE, SIR!"

Maintenance crews in a fighter group are decidedly realistic . . . and from the "old man" down are uncompromising in their judgment of structural design which helps or hinders . . . the problem of keeping 'em flying with the least time off for service, or over-haul. ➤ ➤ ➤ ➤ Perhaps that's another reason why the Thunderjet is so appreciated. It helps get 'em back upstairs . . . quickly . . when the need for service puts the F-84-E in their care. ➤ ➤ ➤ ➤ Maintenance time on the Thunderjet is now the lowest for any jet fighter in service. ➤ ➤ ➤ ➤

Over a period of accelerated service tests, three F-84-E's completed 450 hours of test flying with only 1.34 man hours for every hour of flight.

Republic Aviation Corporation, Farmingdale, L. I., New York

REPUBLIC AVIATION

Makers of the Mighty Thunderbolt • Thunderjet • XF-91

News in Brief

Aleutian Route: The future of Northwest Airlines' northern route to Tokyo was placed in question March 23 with announcement by CAB Chairman Joseph J. O'Connell that CAB could not support expenditure of Federal funds needed to continue operation of necessary Aleutian facilities following withdrawal of the Air Force from bases in that area. Affected will be NWA's opertions from Anchorage to Tokyo which has been using the base at Shemya. Two possibilities are that NWA would either have to attempt to fly Anchorage-Tokyo nonstop or abandon the northern route and request extension from Hawaii to Tokyo.

Pilot Petition Dismissed: The petition of the International Professional Pilots Association (IPPA) for election among the pilots of National Airlines has been dismissed by the National Mediation Board on grounds that IPPA represented only 33% of the bona fide flight officers of the company. The Board found that there were 174 employes eligible to participate in such an election of which IPPA represented 58, less than the required majority for a representation election.

Three-Level Fares: IATA's system of three different round-trip rates on the North Atlantic went into effect on March 22. One rate applies when both eastbound flights are made during peak traffic season, the second when both trips are in the off season, and the third when one trip is in peak season and other other during off months. Eastbound, full fares are charged from April through August, with lower rates in effect September-March. Westbound, full fares apply July-November, lower rates December-June. Peak season round-trip New York-London will be $630, off season $466.70, and on season-off season $548.40.

TWA Leasing 2-0-2's: TWA will lease 12 Martin 2-0-2 transports as stop-gaps until Martin starts delivery of the 4-0-4 aircraft which TWA is purchasing. The 2-0-2's are planes left over when Martin shut down the production line two years ago. Delivery of the first four 2-0-2's is scheduled for July, with complete delivery of 12 by early fall.

Lee Approved: Nomination of Josh Lee for reappointment as member of the Civil Aeronautics Board has been approved unanimously by the Senate Interstate and Foreign Commerce Committee, after being passed over three times because of objections filed by Amos Heacock, president of the Independent Air Carrier Conference of America. Opposition was based on views Lee expressed on monopoly and competition in a dissenting opinion in the Air Freight Case.

Budget Slicing: A one-package appropriation bill was reported out March 21 by the House Appropriations Committee reducing Budget Bureau requests for Air Force, Navy, Civil Aeronautics Board, and Civil Aeronautics Board, and Civil Aeronautics Administration. The proposed cuts were:

Air Force: Appropriation reduced $43,962,000 below the $5,234,866,000 approved by Budget Bureau.

Navy: Cut totaled $36,054,000 from $4,484,235,000 approved by Budget Bureau.

CAB: Committee cut Budget-approved appropriation of $4,323,000 by nearly 22%, which would give the agency $3,400,000 for fiscal 1951. This is $923,000 less than requested and $220,500 less than current 1950 allotment.

CAA: Budget's request for $282,716,500 was cut to $238,826,500, or slightly more than 14%. The committee expressed concern over the "mounting cost to the Federal government" of activities covered in CAA money requests. CAA had previously recommended a tax of 1½c per gallon of aviation fuel as a possible means of defraying the cost of operating the Federal airways.

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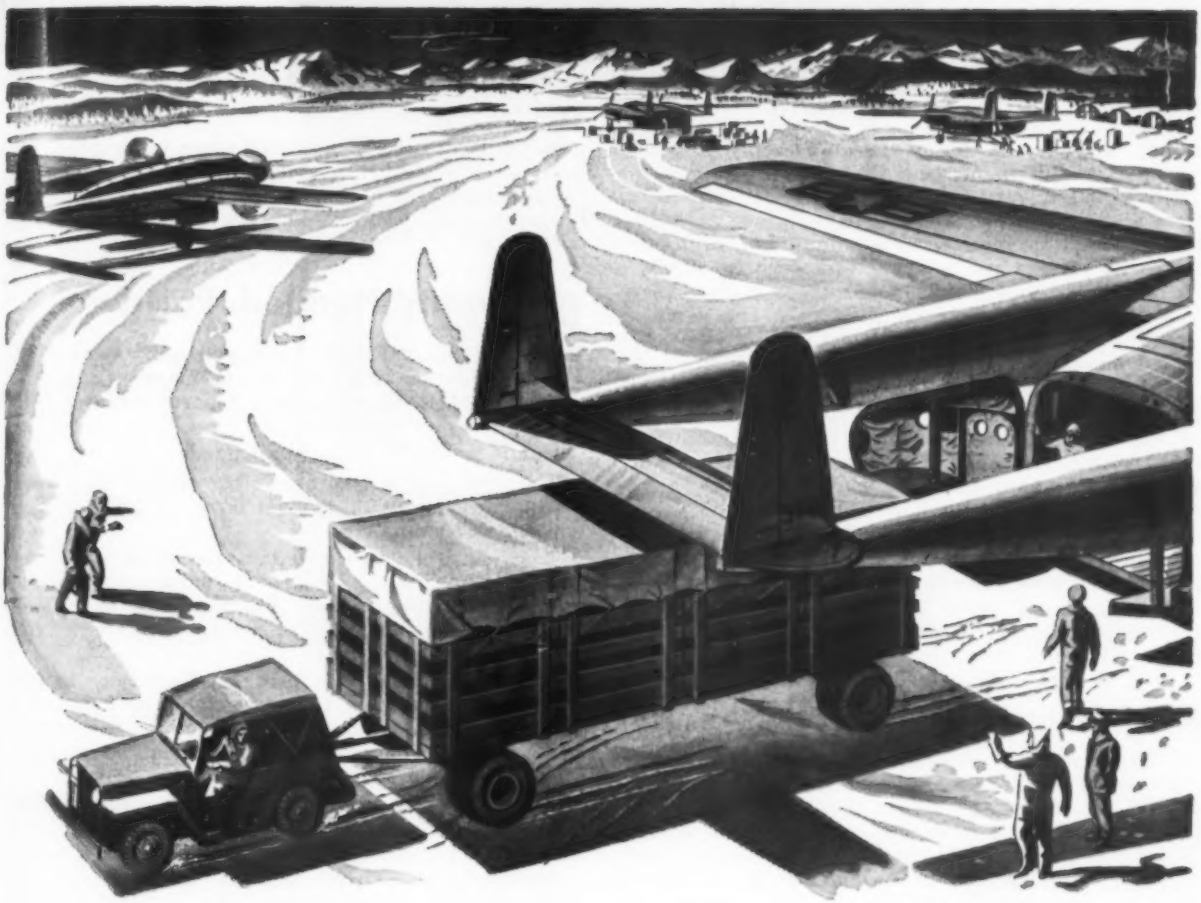
INDEX



DELIVERY—

Via the Air Route

The Military Air Transport Service (MATS) contributes to the mobility of the Armed Forces by airlifting cargo and personnel *whenever* and *wherever* needed to fulfill national military requirements.

Fairchild C-119 Packets, soon to be flying for the Military Air Transport Service, help fulfill this vital air transportation mission. Capable of carrying 64 passengers or 10 tons of cargo, this twin-engine transport and cargo plane has the *versatility* to accomplish numerous types of operations required via the MATS Air Route.

The C-119's unique rear loading at truck-bed height allows for rapid handling of cargo, eliminating the necessity for extra ground handling equipment. Airplane engines and parts, bulky communication equipment, vehicles, tanks and field kitchens are some of the many military items the Fairchild C-119 carries with ease. In addition to its utility as a cargo plane, the Packet is equally efficient for air-evacuation, air-sea rescue, and personnel transport.

The C-119 is one of a series of Fairchild transport planes which will continue to play a versatile role in the operations of the world wide Military Air Transport Service.

Teamed for Defense
Armed Forces Day
20 March 1950

ENGINE AND AIRPLANE CORPORATION
FAIRCHILD *Aircraft Division*
HAGERSTOWN, MARYLAND

EDITORIAL

(CONTINUED FROM PAGE 7)

extent necessary to supply the deficit in M-Day air transport requirements, the expense would be prohibitive and a very substantial diversion of traffic from all other forms of transportation would result. MATS should be retained as a training unit in peacetime with private and competitive enterprise supplying the nation's economic needs. A vast expansion of MATS—sufficient to erase the equipment deficit—would weaken the airlines very greatly and would be a long step toward government ownership.

3. *Put a reserve fleet of transport airplanes in "mothballs."* To purchase and "mothball" a big fleet of four-engined aircraft would involve prohibitive costs, although a modified program by which the government would purchase and store obsolescent aircraft would seem to have some merit. Such an early retirement plan would enable airlines to keep their operating fleets up to date by steady purchases of new and more modern types.

By combining these three alternatives without relying too heavily on any one, a balanced program of preparedness would be assured.

MATS Contracts for Airlines

There is another possibility, too, which Mr. Ramspeck neglected for one reason or another to mention. Would it not make sense for MATS to contract to the civil airlines a large part of its current operations? The Air Force is now in the process of turning over the training of mechanics and pilots to private aeronautical schools, in the interest of economy and efficiency. Would not M-Day planning be moved a step forward by combining the best efforts of the civil airlines and the military in performing military transport operations?

Mr. Ramspeck likewise made no mention of the sizeable number of trained and experienced airline pilots now on furlough. Here is a reservoir of skill that should not be going to waste. Using one airline pilot and one military pilot in each cockpit under a contract operating scheme might well serve the purpose of improving the efficiency of MATS and keeping trained civil pilots at work during these times when airline crews have had to be reduced for economy reasons.

It is a serious matter, this deficit of transport equipment. In World War II the military could requisition much of the civil airline fleet because the nation's economy had not yet come to depend so greatly on the speed of air. Today and tomorrow are quite another matter. It is quite imperative to the industrial economy that air service continue in operation and it has been proven many times that only under private management can airplanes achieve their fullest utility.

If M-Day planning for larger air transport capacity is to move ahead intelligently, it is clear already that the civilian agencies must be the spearhead. The Pentagon is concentrating almost exclusively on military aircraft, guided missiles and the like. No Air Force or Navy funds are going toward the purchase of transport airplanes. No military funds are going into jet transport development. Yet one of the greatest needs on M-Day, if and when it should come, is for air transport. We hope the sound recommendations made by Mr. Ramspeck on behalf of the airline industry carry some weight and bring about some early action.

Empty-Handed Partner

MOST AIRLINES are turning in profits for 1949. It's been so long since black instead of red ink predominated on those annual reports that the 1949 profits look awfully good.

But it is hardly time to stampede.

The 1949 profits still aren't big enough to give a break to the forgotten partner of the airline business—the stockholder.

Too many people these days forget that a lot of people provided the money to make possible the various airline companies. For the most part these folks have had very meager returns on their investments.

United Air Lines has just distributed to its employes the smartest and most readable booklet we've ever seen on the subject of "You and Your Partners in Business." There are three links in the partnership—employes, stockholders and customers.

The $2,249,405 profit which United made in 1949 sounds like a lot of money, the booklet says, but it isn't enough to give the stockholder partner a break.

United has two "pay windows," one for employes and one for stockholders. The employes' "pay window" has never been closed. The stockholders' "pay window" has been open only five times in the past sixteen years. "Unless we open that window and keep it open, our stockholders will quit and invest their money elsewhere." The 1949 profit was not big enough to open the stockholders' "pay window."

We don't know who in United inspired and prepared the partnership booklet but we can recommend it most heartily to all other companies and to all airline employes. There has been so much talk of alleged government "subsidies" in the past year or two that employes and public alike are apt to forget that it has not been government money that has built up the industry, but the money of the public. The drive for economic self-sufficiency must continue. If the stockholder becomes weary and loses his faith in the airline industry, everyone connected with the industry will be the loser.

WAYNE W. PARRISH

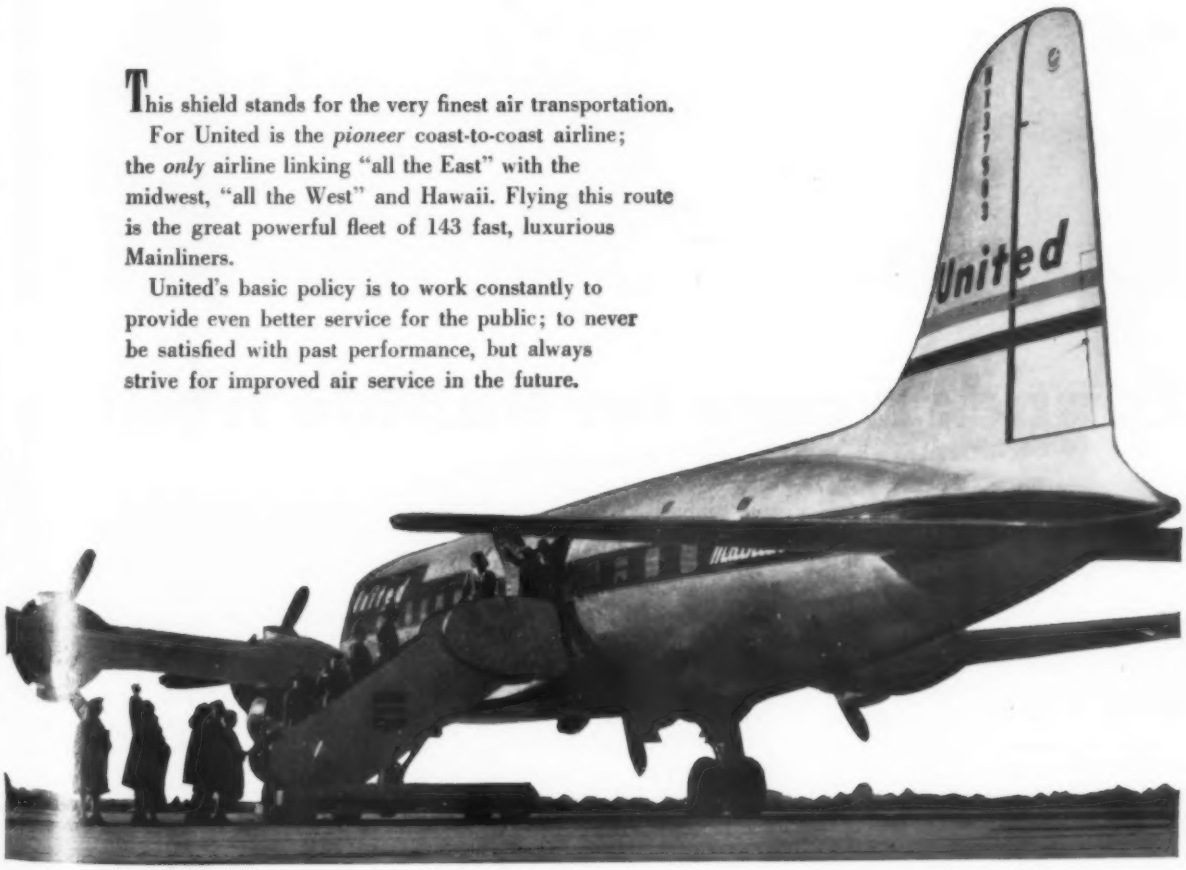
• The U. S. share of the cost of operating the International Civil Aviation Organization (ICAO) during fiscal 1949 is estimated at $165,225 or 18.69% of the total cost in report No. 1274 issued by the Senate Committee on Expenditures in the Executive Departments. Percentagewise, U. S. cost of participating in ICAO activities was much lower than the average cost of participating in 46 other international organizations. During fiscal year 1949, U. S. participation in 47 international organizations entailed an outlay of $144,629,262, or more than 47% of the total, the report stated.

UNITED AIR LINES

This shield stands for the very finest air transportation.

For United is the *pioneer* coast-to-coast airline; the *only* airline linking "all the East" with the midwest, "all the West" and Hawaii. Flying this route is the great powerful fleet of 143 fast, luxurious Mainliners.

United's basic policy is to work constantly to provide even better service for the public; to never be satisfied with past performance, but always strive for improved air service in the future.



Found: a cure for bubble trouble

HIGH altitudes were raising hob with the inflatable seals on the North American B-45's pressurized bubble canopy. The seals burst under the severe effects of high pressure on the inside, low pressure on the outside.

B. F. Goodrich engineers studied the problem. A really effective inflatable seal, they figured, should blow up like a paper bag instead of a toy balloon—easier and with lower, safer pressures. They took knitted fabric, rubber-coated inside and out, and cured it to a soft rubber channel base. Under pressure, this rubberized fabric (slack before inflation) increases the size of the seal many times, with almost *no stretching* of the rubber.

As a result, the new B. F. Goodrich seal gives far greater protection against high altitude blowouts. It inflates with *less* pressure at *minus* 65°F. than the old-type seals required at *room* temperatures!

The BFG inflatable rubber seal fits complex curves. It's more adaptable, tougher, more damage-resistant. Sealing and unsealing action is faster. Sliding wear and scuffing are minimized.

The new seal has proved so superior that it has been adopted by the Banshee, F-86, F-7-U and other planes as well as the B-45. It is tailored to each design. If you have a sealing problem—in canopies, movable walls, wind-tunnel doors, or other projects—check on this latest BFG aviation "first". Write to *The B. F. Goodrich Company, Aeronautical Division, Akron, Ohio.*

B.F.Goodrich
FIRST IN RUBBER

Established
June 1, 1937

American Aviation

Volume 13
Number 21

New CAA Actions Speed RTCA Transition Program

By William D. Perreault

The transition phase of RTCA's common system of air navigation and traffic control moved into high gear late last month when CAA:

(1) **signed a $4,210,750 contract** with Hazeltine Electronics Corp. for the purchase of 450 sets of distance measuring equipment;

(2) **commissioned the first post-war** installation of civil airport radar at Los Angeles, the first of eight Gilfillan sets now being installed;

(3) **released new instructions** and forms to the airlines and CAA personnel aimed at making it easier for the airlines to apply for and make use of radar controlled approaches;

(4) **circulated bid invitations for 40 sets** of precision approach radar systems;

(5) **circulated bid invitations for 40 sets** of surveillance radar systems.

Each of the steps had widespread significance. Distance measuring equipment will be available for all 406 omni-range stations and ultimately for some airports equipped with ILS but not omni-range stations.

The $4,210,750 order, the largest in CAA history, is for ground station transponders. DME will provide a useful navigation aid, a precision landing aid, and a basis for improved traffic control which should double the useful capacity of the overcrowded air lanes into busy airports. It will also serve as a building block for the off-course computer and other future aids.

New GCA Installations

The commissioning of precision approach radar and surveillance radar at Los Angeles is a major stride toward improved traffic control, higher airport utilization and safer operation. Prior to the LA commissioning there were only three domestic airports equipped for radar assisted landings: Chicago, New York and Washington. The equipment was wartime surplus, useful but relatively obsolete by today's standards. Its principal value has been obtained at Chicago where CAA pioneers in tomorrow's traffic control procedures.

The Los Angeles installation is the first of eight Gilfillan units now well under way. The second installation, a replacement of wartime equipment at La Guardia Field, should be commissioned any day. Following in rapid succession will be the completion of new aids at Chicago, Cleveland, Washington, D. C., Atlanta, Boston and Idlewild, N. Y.

The eight installations will have a total equipment value of $1,604,516, which is only part of the over-all cost.

This is not simply replacement equipment. Even at the three airports presently equipped, the Gilfillan units will provide major improvements. In addition to greater reliability, they offer MTI indicators, pictorial scopes which show only those items which are in motion, thus eliminating ground clutter.

The surveillance unit has a range of 30 miles in all directions or 60 miles in one direction. Provisions are made to use the scale for 6-10-20 or 30-mile surveillance, thus changing the scale of operations. These improvements will directly affect the quality of service provided and the acceptance on the part of the users.

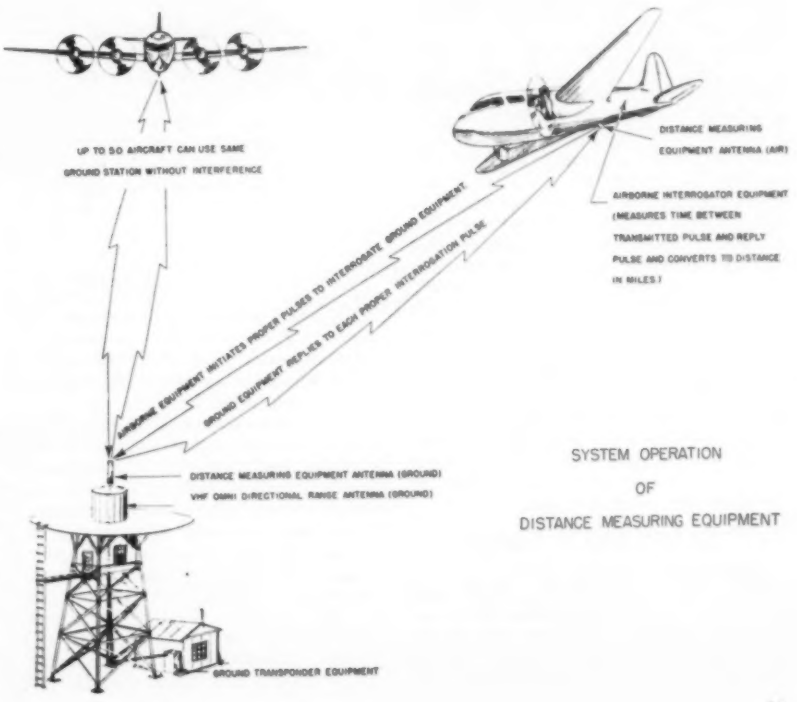
While CAA will grant approach minimums with GCA equipment parallel to those granted for ILS, the airlines have not generally accepted the new aid. United Air Lines is the only U. S. operator approved for scheduled domestic use of GCA for approaches, according to CAA. UAL is authorized into New York and Washington with the same minimums authorized for ILS approaches.

Available to All

Actually all the airlines operating into the three equipped airports make use of the radar facilities. GCA operators monitor all ILS approaches and advise the pilot of his position but actual approaches are on the ILS. It does not require a special CAA authorization on the part of the airline to make this service available.

The availability of radar aids at these eight airports may justify the economics of training the airline crews in use of radar approaches as required by CAA. Meanwhile there is another major radar installation program about to start. This is the General Electric contract for 27 surveillance sets at a cost of $2,966,168. These units were ordered in December of 1948 out of CAA's fiscal 1949 funds.

Many variables affect the final in-



SYSTEM OPERATION
OF
DISTANCE MEASURING EQUIPMENT

stallation dates for each location but CAA's tentative schedule for these 27 units has been drawn up. The first eight are quite definite while the remainder are subject to change to suit current conditions:

(1) Newark	Norfolk
(2) St. Louis	San Antonio
(3) Greater Pittsburgh	Jacksonville
(4) Seattle	Detroit
(5) Philadelphia	Memphis
(6) Houston	Dallas
(7) San Francisco	Kansas City
(8) Oakland	Minneapolis
New Orleans	Denver
Indianapolis	Honolulu
Salt Lake City	Annette Island
Portland	Anchorage
Columbus	Fairbanks
Covington	

While primarily considered a traffic control aid, surveillance radar is taking on increasing importance as an approach aid. CAA's new form 511D provides specific criteria for the approval of PPI (surveillance radar) approaches. Effectively the adoption of this type approach would substantially reduce the landing interval in marginal weather operation. Within the limits of established terrain obstruction clearances, PPI approaches make every runway usable in marginal weather.

New Procedures

At the present time all aircraft approaching an airport are required to maintain a certain minimum en route altitude until they reach the outer marker of the ILS approach pattern, a point about five miles out on the approach path. When approaching an airport from a point in the opposite direction to the approach runway, it is now necessary to spend 10-15 minutes in flying over the airport and to the marker where procedure turns are initiated.

Under the new rulings, on which some data have already been released, airlines which file and receive approval for PPI approaches will be able to lower to established minimums for the particular airport and runway in order to make the approach straight in to the runway. In such instances the pilot will use his altimeter for altitude clearance and the surveillance radar guidance for direction or azimuth.

As indicated above, this may well save 10-15 minutes on an approach. It will also apply to GCA approaches into the instrument landing runway and thus spur airlines to accept GCA. In the latter instance the GCA controller will be able to bring the pilot down as desired from his minimum enroute clearance altitude before he reaches the outer marker.

$8,823,200 to Spend

Meanwhile, while CAA sets in motion the procedures which will make the radar utilization more attractive and practical, another major step has been taken to insure the availability of GCA at additional airports. CAA has issued bid invitations covering the manufacture and installation of 40 sets of surveillance radar units and 40 sets of precision approach radar. Both contracts have high monetary value.

Based on previous contract awards, the total equipment value of these contracts will represent about $8,283,200. Of this sum, $3,888,880 would be for precision approach units and $4,394,320 for surveillance radar systems. A number of the precision approach units will be used to supplement surveillance sets listed under the General Electric contract above.

Possible Delay

CAA has funds enough from the fiscal 1950 budget to handle about 14 installations of each type. The remainder will come out of future appropriations, and primarily out of 1951's budget. In this light CAA has requested over $25,000,000 for equipment to be purchased in order to implement the RTCA program on schedule. In recent discussions CAA Administrator D. W. Rentzel said that proposed cuts (about 1/3) in the CAA appropriations might delay completion of the transition phase as much as one year beyond the target date of 1953.

The major importance of all this is that the transition program is well underway. In addition to the outstanding new contracts and arrangements mentioned above, CAA is proceeding with the installation of ILS's at a fast pace. There are 76 new ILS's scheduled for 1950 and 1951. As in the case of the GCA installations, the final dates of these installations may be altered to meet changing conditions.

Distance Reading

Considerable attention has been given to ILS, GCA, and the omni-directional range systems. DME is relatively new to the operating industry. Basically the DME cockpit instrument will provide a three digit number very similar in appearance to those on an automobile speedometer. When the pilot tunes in his omni-directional radio range he will automatically tune in the DME. With the omni-range supplying azimuth or directional information and the DME supplying a distance reading, the pilot for the first time in history, will know his exact position without further cross checking.

Each DME station will serve 50 airplanes simultaneously and this capacity can be increased. In operation, the aircraft DME equipment will transmit an interrogating signal 30 times each second. This signal will trigger transmitting equipment located at the ground station and cause another signal to be sent back to the aircraft. The aircraft equipment measures the time interval between transmission and reception and converts this into a distance reading. Dual ground installations with automatic switchover provisions insure against an equipment failure making the system inoperative.

Airborne Equipment

Airborne DME equipment will cost about $4000-$6000, depending on production quantities and final choice of accuracies. As the transition phase of the RTCA program progresses, sometime prior to 1954, the airlines will find DME a necessary piece of equipment. Meanwhile CAA will receive the first production unit in November, 1950, five additional units in March of 1951 and production will reach 40 units per month by June 1951. This will provide additional time for design and testing of improved airborne equipment.

Ultimately DME units will be used to replace marker beacons on the airways and in the ILS.

The Computer

With DME equipment on the ground and in the air, the use of the off-course computer is a simple matter of choice. That is, there is no requirement for ground installations for use of the computer. Using information obtained from the DME and VOR, the computer will provide pilot with a simple left-right indication which he can use to fly a straight course between points which are not directly on the omni-range path.

The omni-directional range is more flexible than the older four-course radio range, but a pilot must still fly dog-legged routes on long distance flights if he is to stay on the radio ranges. The off-course computer permits the pilot to fly arbitrary routes between any two points within the range of the equipment. The point of destination does not have to be an omni-equipped airport. Effectively this increases the number of omni-equipped routes.

With these facilities CAA controllers will be able to handle traffic with an accuracy that has never been achieved before.

Howard Dean, Pan Am Vice President, Dies

Howard B. Dean, 53, administrative vice president of Pan American World Airways for the past three years died unexpectedly March 21 of a heart ailment in East Hampton, Long Island. A graduate of Yale University and a World War I officer, Dean was active in the brokerage business in New York for a number of years before joining Pan American as a vice president in 1943.

In 1944, he was made a director of the airline and put in charge of its Latin American affairs. In January, 1947, he was appointed administrative vice president. He served also as a vice president and director of Pan American-Grace Airways and as a director of Intercontinental Hotels Corporation.

EXPERIMENTAL 2-place Helioplane. Four-place production model incorporating same characteristics will be manufactured by Aeronca Aircraft Corp.

Helioplanes By September, Says Aeronca

It's now official that Aeronca Aircraft Corp. will manufacture the revolutionary four-place Helioplane for the Helio Corporation, Norwood, Mass., and, barring unexpected certification difficulties, early models should be in the hands of a selected group of users by September.

Announcement of the Aeronca-Helio arrangement was made jointly by officials of both companies on March 13, confirming first disclosure of the pending agreement in AMERICAN AVIATION last December 1.

Under the agreement, Aeronca will serve as contract manufacturer of the Helioplane Four, with Helio Corp., developer of the craft, handling sales and engineering problems.

The first model, which will be used for CAA certification tests, is being assembled at Norwood, with some of the parts manufactured at Aeronca's Middletown, Ohio, plant. Aeronca engineers and pilots are expected to share in the testing program.

CAA Put on Spot

Officials of both companies are hopeful of certification by July and there are indications that the Civil Aeronautics Administration is both willing and anxious to cooperate in speeding up the normally slow regulatory process.

With the unparalleled interest of the lightplane industry, local operators, and potential owners focused on the project, CAA's certification process is clearly on the spot. The course of the Helioplane through airplane airworthiness requirements of CAR Part 3 will be watched closely to see whether present procedures can be flexible enough to encourage new developments toward improved lightplanes. The slow-landing, short-take off craft is regarded as a major step forward in the lightplane field.

Production of component parts will start at the Aeronca plant as soon as the first model wins CAA approval. Assembly operations will be at Norwood for a few months, then transferred to Middletown as volume increases.

The Helioplane Four should be available in limited quantities by late summer and about 100 are slated to be built by end of the year. First models will go to selected users— mainly industrial firms and executive owners— for market testing and service experience.

Price Under $10,000

Production cost studies are now underway to determine the selling price. The price is expected to be well under $10,000, which would place the craft within the range of competing four-place models.

There is good possibility that a hand-picked group of Aeronca distributors will be used in the selling program, although nothing definite has been announced on this point. Considerable care will be given to establish a sound field service organization as a step toward encouraging proper maintenance by users of the craft.

Operational experience during the critical fall and winter months should do much to determine the extent to which the Helioplane can stimulate the depressed lightplane market in 1951.

In commenting on the choice of Aeronca to produce the Helioplane, Dr. Lynn Bollinger, co-designer of the plane along with Dr. Otto C. Koppen, of Massachusetts Institute of Technology, pointed out that selection was based on the manufacturer's "excellent production facilities, skilled workers and a reputation for dependable workmanship. Aeronca, moreover, has acquired new capital and a hard-hitting management team which promises much for the future.

"The use of existing aircraft facilities appears the most efficient way to manufacture Helioplanes. However, the distribution as well as the research, engineering and development functions will remain in the Boston area."

Aeronca officials indicated that the company would continue with production of its 1950 two-place Champion and four-place Sedan, alongside the Helioplane.

Helioplane Design Report

To give its readers a first-hand analysis of unconventional design features of the Helioplane, AMERICAN AVIATION *sent Design-Engineering Editor Richard G. Worcester to interview co-designers of the craft, Dr. Otto C. Koppen, professor of aeronautical engineering at the Massachusetts Institute of Technology, and Dr. Lynn L. Bollinger, of the Harvard Graduate School of Business Administration.*

For Worcester's report on what makes the Helioplane a major advance in lightplane design, turn to page 21.

ICAO Document: ICAO has published a 90-page document dealing with accident investigation procedures. "Manual of Aircraft Accident Investigation," document 6920-AN/855, concerns the methods used in gathering factual and relevant details of the accident and presenting them in an appropriate manner. Available from the Secretary General of ICAO, International Aviation Building, 1080 University Street, Montreal, Canada.

Man of the Year:

EAL Lead Mechanic Wins Maintenance Award for '49

Robert L. Fulton, a lead mechanic with Eastern Air Lines at Miami, has been selected by a board of three judges as the winner of AMERICAN AVIATION's first annual Engineering and Maintenance Award for 1949.

Fulton's entry in the contest was a device designed to simplify the pressure testing of fuel systems on airplanes and engines while they are in overhaul without connecting up the aircraft's electrical system. Its originality plus economic and safety aspects were considered as worthwhile contributions to the airlines' maintenance program.

In recognition of Fulton's personal initiative and achievement in this effort he will be presented with a cash award of $100, a trip to Kansas City for the Air Transport Association's annual Engineering and Maintenance Conference, April 4-6, and an engraved wall plaque citing the award.

The three judges who made the final choice, from among a sizable group of entries, were Lan Caldwell, chief engineer of Capital Airlines; Allen Dallas, engineering director, Air Transport Association; and A. F. Notley, chief, air carrier section, CAA Office of Aviation Safety.

The judges' choice of Fulton, along with those singled out for special mention, was accompanied by a recommendation that future awards should separate the engineering from the maintenance functions. The reason cited was the natural impetus for development in the engineer's everyday work which is not generally paralleled in the maintenance field.

As indicated by the nature of the awards, in making the selection and citing honorable mentions, the judges weighed the initiative above and beyond the requirements of the contestant's job.

After long and careful consideration, the judges ruled out a number of engineering entries of exceptionally high calibre because they did not fit within the strict sense of the contest rules.

In fairness to those who withheld entries on the basis of the restricted qualifying rules, the judges dismissed a number of entries not primarily applicable to 1949 development, not capable of proper crediting to an individual or not the work of a maintenance man or engineer.

It was this group of entries about which the judges expressed particular concern when they suggested that engineering and maintenance functions should be separated in future awards. The judges felt that the type of work achieved within engineering circles, over a period of time and by cooperative effort rather than individual accomplishment, would hardly fit the existing pattern.

In making this award, AMERICAN AVIATION hopes to provide incentive to the airline mechanics and engineers that will bring about mutual benefits to the airlines and airline employes. Toward this goal the judges' recommendations will be carefully considered prior to announcing the rules for 1950 entries.

Behind Winning Entry

The recognition of Fulton for his personal initiative and achievement is, in fact, a tribute to all mechanics and engineers who serve the airlines

Award Judges—These are the judges who selected Robert L. Fulton, EAL lead mechanic, as winner of the first annual Engineering-Maintenance Award. Left to right, they are: Allen Dallas, engineering director of the Air Transport Association; A. F. Notley, chief, air carrier section, CAA Office of Aviation Safety, and Lan Caldwell, chief engineer with Capital Airlines. AMERICAN AVIATION is grateful to the judges for the time and effort devoted to the project.

Honorable Mentions in E-M Contest

AMERICAN AVIATION appreciates deeply the cooperation of the airlines and individuals who submitted entries in its Engineering-Maintenance Award contest for 1949. The results were encouraging not only because of their numbers but because of their quality. While singling out the work of Robert L. Fulton, the judges expressed particular interest in a number of other entries which they cited for special mention.

These entries were:

• **George E. Casseday,** sheet metal shop foreman, United Air Lines. Casseday developed an improved water tank for use in the Douglas DC-6 airplane which resulted in large initial savings, lower maintenance costs, and greater longevity for the unit in concern. The reworked tank was lighter, less expensive, corrosion resistant and incorporated an improved heater unit.

• **C. F. Finiels,** lead mechanic with Eastern Air Lines. Finiels recognized a shortcoming in the design of the combustion heaters used by Eastern and initiated a rework which eliminated a possible hazard, increased overhaul time and improved the longevity of the unit. It was later adopted in the basic design of the heater which is in widespread use throughout the industry.

• **Don Stombaugh,** plane overhaul manager, United Air Lines. Stombaugh developed a solution to the Douglas DC-6 lateral trim problem which resulted during fitting and adjusting control surfaces as necessitated by major overhaul or damage. By application of Stombaugh's procedures, UAL estimates it will save approximately 200 test flights per year.

• **Leon O. Milstead** and **Lawrence A. Perry,** mobile equipment mechanics, Chicago and Southern Airlines. In a joint entry, these mechanics outlined major improvements made to a standard mobile air conditioning unit which eliminated its out of service time due to mechanical failures, by about 100%. Its operation insured improved passenger service year round and introduced other economies. Several airlines use this particular type unit.

• **Bernice B. Hanna,** mechanic, Eastern Air Lines. Hanna devised an improved method of wiring ignition harnesses during assembly of the unit for the Wright C18 series engines. It resulted in savings in time and related economies.

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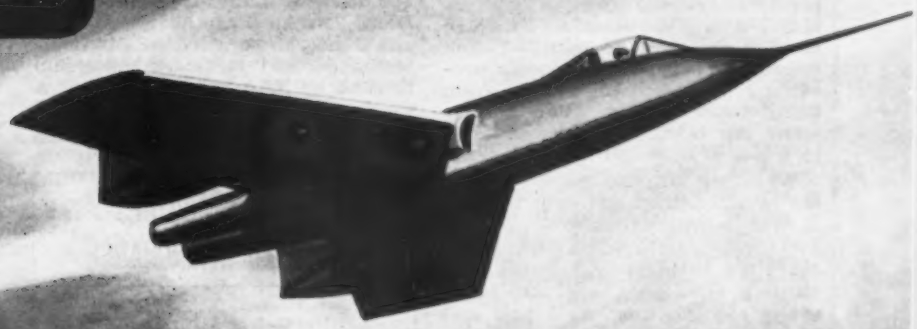

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LEADER IN LANDING GEAR

so well year in and year out. No better tribute to this group could exist than the operating safety record of the commercial airlines.

In recognizing the need for a new fuel system check-out unit, designing and building it, Fulton showed foresight and initiative beyond the normal requirements of his job.

Each day Eastern Air Lines was faced with the problems associated with checking fuel systems under pressure. Engine changes are included among the occasions on which such checks must be made. Fulton found that safety requirements preventing the electrical system from being connected up while various work was being performed resulted in a loss of time and manpower.

When an airplane moved out of the overhaul shop and onto the line it was sometimes delayed because fuel leaks were discovered which could not be properly detected with existing equipment and still meet safety requirements. As a lead mechanic in Eastern's engine change department, Fulton noted this loss and did something about it.

How He Did It

Using surplus and otherwise readily available equipment, Fulton designed a portable, self contained unit which can be used on the Douglas DC-4 and Lockheed Constellation, as well as other transports with only minor adapter changes. A 50 gallon drum is used as a reservoir for Varsol, which is used in place of fuel during the tests. A 24 volt motor, suitable switches and a battery provide power to pump fuel from the reservoir into the fuel system.

The device has provisions for varying fuel pressure to meet system requirements and an associated gage. Other provisions include grounding cables, a portable fire extinguisher, flexible fuel lines and controls.

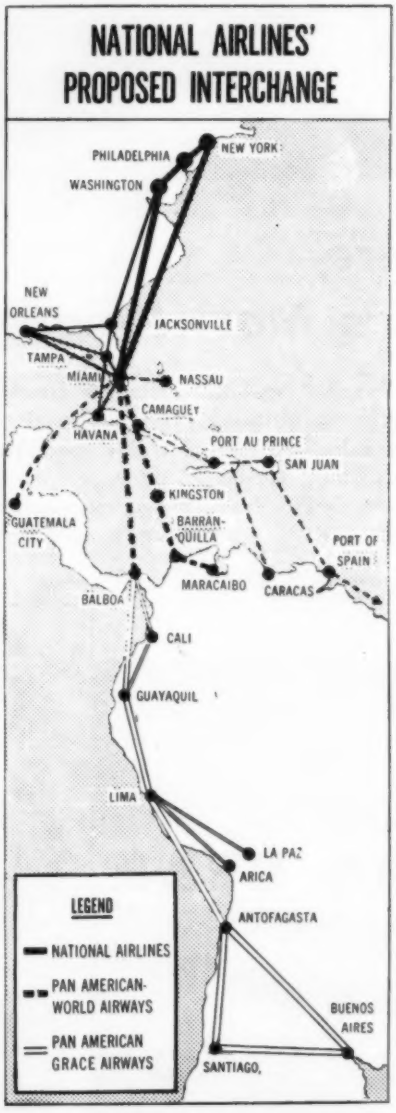
After designing the basic unit, Fulton worked out a series of procedures which make it possible to check new engine build-ups for leaks prior to installation, check complete aircraft fuel systems while the airplane is in the hangar for major checks and the fuel tanks are empty, pressure check lines and valves following replacement of either, etc.

In operation Eastern finds that the unit saves considerable time during aircraft overhaul by finding problems while the aircraft is still in the hangar. This means the airplane can be in service as much as a day earlier. As a safety device the Fulton fuel testing unit minimizes the handling and transfer of fuel in the hangars while permitting fuel system checks when many other necessary tasks are performed which would otherwise obviate fuel system checks.

Re-Opened National Hearing Puts Emphasis on Interchange

With the issue of "dismemberment" of National Airlines pushed into the background, CAB hearings reopened last month on the proposals for equipment interchanges between NAL, Pan American World Airways and Panagra, for a NAL-Eastern interchange, and for stock ownership in NAL by PAA and W. R. Grace & Co.

Dismemberment was the original issue when hearings were first held a year ago. The proceedings were adjourned indefinitely because of the interchange proposals, and now that they have reopened the emphasis is definitely on interchange and stock acquisition.



The map above shows the international routes on which one-plane service would be provided through equipment interchanges proposed by National Airlines, Pan American-Grace Airways and Pan American World Airways.

During two days on the witness stand, G. T. Baker, NAL president, testified that the interchanges at Miami with PAA and Panagra will provide the first through-plane American flag service from South America to northeastern U. S., while the EAL interchange at New Orleans will give through service between Florida and south Texas.

In addition, NAL will have Stratocruiser and Constellation equipment available from PAA and Panagra for New York-Miami business, and will not have to buy more planes for peak season traffic, he stated. He added, however, that the EAL interchange doesn't obviate the necessity for a NAL route to the west coast but is merely an "interim substitute."

Question Stock Ownership

On cross-examination, numerous questions were asked concerning the effect on control of NAL of PAA owning 30% of the outstanding stock, Grace owning 18%, with Baker and his wife holding about 12%. Baker asserted he was "really unconcerned" about this possibility. "I don't think the deal dominates National," he said. "If I thought we were, we wouldn't have signed this deal."

The NAL president was asked several times by opposing lawyers whether he would accept the interchanges without the stock deals. He said he would want to give it a "lot of thought," adding that stock participation gives PAA and Panagra an incentive.

Cross-examination also developed that if the stock deals were disallowed Baker would, "under proper terms and conditions," be willing to resume merger talks with Delta; that he thought a NAL-Panagra merger would be "very sound" from a route pattern standpoint; that he was still willing to talk merger with Northeast, and that a NAL-Delta-Colonial-NEA merger might be good under certain conditions.

The only testimony going directly to the question of dismemberment was presented by NAL itself. Appearing as a NAL witness, A. W. Gotch, of Gotch & Crawford, planning consultants, asserted that the company has a good record as a low-cost operator, has a "sound and logical" system, and that dismemberment would not be justified.

Lesson of Portrex:

More Airlift Study Needed

By Brig. Gen. A. H. Stackpole

OPERATION Portrex, on which so many labored for so many months during its preparatory planning phase and so many more struggled mightily in the attack and defense of Viecques Island in the Caribbean, is a thing of the past save for the evaluation of its lessons and the redeployment of those air, sea and ground forces assembled for the exercise.

But what has the Department of Defense to show for that vast expenditure of money, time and effort in the largest maneuver of the combined forces since the most recent World War ended and by far the largest in any similar peace time concept?

What was learned that we did not know when the Missouri dropped anchor in Tokyo Bay for the great surrender?

On first glance, before all the reports of umpires and observers have been given thorough scrutiny, the answer might well appear to be "nothing." Whether that answer will remain the same after more exhaustive study is given the reports must remain for future answer.

But certainly the initial reaction of those who saw the ships moving to battle station along the south coast of the small island off Puerto Rico, who watched the drop of the parachute battalion, the progress of the landing craft, the stubborn defense of the beach, the preliminary absence of aircraft in the first day of the invasion, and the other elements attending the development of Portrex, was that it was strongly reminiscent of an Armed Forces movie without the full scale sound effects.

Last Amphibious Maneuver?

One senior officer of the Army, having spent the first day ashore in studious contemplation of the attack and defense, expressed firm belief that he had witnessed the last large amphibious maneuver to be conducted by American military, naval and air men and that hereafter the efforts would be concentrated on problems involving airlift solution.

Administratively, all agreed that it was a great success, with few details forgotten in the assembly, employment, feeding and unequipping of the 80,000 men participating. The overload of observers, both military and civilian, whose presence strained the patience of the public information personnel, was sufficient to prevent the successful takeoff of almost any mission, but, in spite of this annoying detail, the armed forces carried on in a manner reflecting great credit on the careful attention to detail apparent in the staff work.

The most often expressed disappointment had to do with the comparatively minor use of aircraft on the first day of the invasion. Observers who had seen the concentration of planes on Puerto Rican fields and thought of the carriers over the horizon with their pilots standing by for takeoff, were amazed to see the mere handful of aircraft, either orbiting high above the beach awaiting call or diving on the impact area along the southern end of Viecques. The anticipated mass use of air power never developed, although there was a more thorough utilization of the air arms after the opening day.

Failure to Use Air

Whether the command failed to call upon the air for apparently badly needed support, when the landing elements were slowed down by hard fighting defenders, because they did not believe it necessary, because they forgot to make their calls, or because communications failed at the crucial time, is something that the final summary may make clear. Certainly the combat-experienced command and staff would not ignore needed air support in a stubborn situation, and it seemed highly improbable that all communication channels would go out when needed, but there was no immediate answer to the mysterious absence of anticipated air activity as the first day's combat ended.

Again, this failure to use air was in such sharp contrast with the initial days immediately preceding D-Day, when the squadrons assigned to both sides aided materially in the development of the problem. Entering into the game with realistic zest, pilots, air crews and ground personnel performed prodigious feats in maintaining their heavy schedule of missions, and with an effective organization of air umpiring there was evidence of the results to be expected from intensive training for the exercise. One group's disappointment over the grounding of its jet fighters with resultant elimination from the exercise was obviously heart-breaking to the youngsters who were just reaching a fine edge in their preparatory warm-up.

Missed Opportunity

In defense of the lack of air activity on D-Day, it was assumed that air superiority had been gained by the invading forces, even though this assumption was not considered to be the proper answer for failure to take the opportunity to gain valuable experience in coordination of air with ground troops in the numbers participating.

In the air operations centers, with their full utilization of the most recent electronic development for aircraft warning, staffs worked around the clock in simulation of combat conditions, and in the main this phase of Portrex was considered satisfactory by staff and umpires.

On equipment for airborne invasion, it was assumed that the replacement of the C-82 boxcar by the more recently developed C-122 would afford a greater measure of efficient operation, but there was inferential comment that the day of the paratrooper in individual descent is on the wane and that some form of attachment to aircraft would contain airborne units and their field equipment in intact landing.

However, with the forthcoming Operation Swarmer to be held shortly in the Fort Bragg area, there will be greater opportunity for comparison with the amphibious phase of Portrex and an opportunity to learn more lessons in air supported invasion.

Balance Sheet

Whether the lessons learned from Portrex justify the cost in money, time and effort is something for a searching analysis of all reports to determine. Certainly nothing of startling moment was discovered in the way of new and hitherto unused techniques or tactics.

Speed of aircraft appeared to be about the only really new element since the last of the Pacific landings, and it may be that the remark of the senior officer regarding the end of amphibious exercises and the advent of more airlift exercises will become the accepted program.

Aviation Calendar

April 4-6—ATA annual Engineering and Maintenance Conference, Hotel Continental, Kansas City, Missouri.

April 10-14—American Society of Tool Engineers exposition, Convention Hall, Philadelphia, Pennsylvania.

April 12-13—Aviation and Gas Turbine Division, American Society of Mechanical Engineers, meeting, Statler Hotel, Washington, D. C.

April 16-20—American Association of Airport Executives annual meeting, Neil House Hotel, Columbus, Ohio.

April 17-19—SAE aeronautic meeting and aircraft engineering display, Hotel Statler, New York City.

April 22—Personal aircraft operation and maintenance conference, Municipal Airport, Reading, Pennsylvania.

April 24-26—Airport Operators Council third annual meeting, Hotel Carter, Cleveland, Ohio.

May 19-20—Institute of the Aeronautical Sciences 7th annual Personal Aircraft meeting, Lassen Hotel, Wichita, Kansas.

May 20-21—National Air Carnival, Birmingham, Alabama.

May 22-23—Third annual Air Transportation Conference, Purdue University School of Aeronautics, Lafayette, Indiana.

June 1-3—Aviation Writers Association convention, Montreal, Quebec.

June 2-11—7th annual Michigan Aviation Week (sponsored by Aero Club of Mich.).

June 4-9—SAE summer meeting, French Lick Springs Hotel, French Lick, Indiana.

June 10-13—National Aeronautic Association 28th annual convention, Hotel Statler, St. Louis, Missouri.

June 22-23—Aviation Distributors and Manufacturers Association mid-year meeting, Edgewater Beach Hotel, Chicago, Illinois.

July 12-14—Institute of the Aeronautical Sciences annual summer meeting, IAS Western Headquarters Bldg., Los Angeles, California.

July 14-16—National Pilots Air Meet and Races, Chattanooga Municipal Airport, Chattanooga, Tennessee.

Sept. 4-6—National Flying Farmers Association annual convention, Bimidji, Minn.

Sept. 18-22—Instrument Society of America 5th annual Instrument Conference and Exhibit, Memorial Auditorium, Buffalo, New York.

Sept. 28-30—Air Reserve Association annual convention, Hotel Texas, Ft. Worth, Texas.

Oct. 2-4—National Association of State Aviation Officials annual convention, Minneapolis, Minnesota.

International

April 11—ICAO Caribbean regional meeting, Havana.

May 9—IATA Composite traffic conferences 1-2-3, Madrid, Spain.

May 9—IATA Fourth technical conference, United States.

May 30—ICAO Fourth Assembly, Montreal, Quebec.

Sept. 5-10—Society of British Aircraft Constructors, annual flying display and exhibition, Farnborough, England.

Oct. 16-20—IATA Annual general meeting, Fairmont Hotel, San Francisco, California.

People in the News

Tom Davis, Assistant Secretary of Commerce for Air, has been sworn in as a member of the National Advisory Committee for Aeronautics, filling the vacancy that had existed since the resignation of **John R. Alison**.

Robert M. Phelps, executive vice president and director of the headquarters staff of the National Aeronautic Association since March, 1948, has resigned effective April 1. He had requested NAA to release him last December but consented to serve until the Association's 1950 program could be developed. He expects to remain in aviation.

Vice Adm. John H. Cassady, new Navy Deputy Chief of Naval Operations-Air, and **William Webster**, new chairman of the Research and Development Board, have been nominated by President Truman to be members of the National Advisory Committee for Aeronautics. Webster was sworn in March 15 as chairman of the Research and Development Board.

1949 Airline Reports

Annual reports of the domestic trunk airlines continued to roll in last month, showing an unbroken list of 1949 profits with not a single carrier reporting a loss. Reports released during the latter part of March included the following:

United Air Lines: The company's annual report showed a 1949 net profit of $2,249,405, compared with 1948's net loss of $1,070,358, and it was pointed out that the gain was greater than was apparent from the net income figures. This was because: (1) air mail payments to UAL last year averaged 63c a ton mile as against 91c in 1948; (2) Federal and state income taxes were $1,919,109 last year as contrasted with income tax credits of $128,000 in 1948; and (3) depreciation charges in 1949 were $12,308,698 as compared with $10,458,095 in the preceding year. Operating revenues were up 10% last year to $91,553,839, while operating expenses were up 2% to $85,835,434.

Capital Airlines: With the highest operating revenues in its history, Capital earned a 1949 net operating profit of $1,319,437 as compared with an operating net of $835,118 the year before. The net after taxes was $834,178. Operating revenues were up 15% to $26,905,836. Net income of $1,681,671 transferred to earned surplus at the close of the year included a profit of $847,493 that was realized through the purchase of debentures for sinking fund payments. In addition, a $3,000,000 bank loan balance was reduced to $300,000 at the end of the year and was paid off in full on January 31.

Chicago & Southern: Reported a net profit for 1949 of $630,087 after taxes of $463,000, compared with a net of $639,477 after taxes of $210,000 in 1948. Operating revenues were up from $10,452,852 in 1948 to $12,368,524 last year, a gain of 18.3%, while operating expenses rose 17.1% from $9,563,514 to $11,203,464. Operating profit was raised 31% from $889,338 to $1,165,060.

Western-Inland: Western Air Lines and its subsidiary, Inland Air Lines, reported a 1949 net profit of $432,053 after taxes, compared with a net of $134,704 in 1949. The 1949 operating revenues totaled $11,534,131, an increase of 10.2% over the 1948 total of $10,463,232. Operating expenses increased 1.9% to $10,564,296. Western's RFC loan of $6,421,606 had been reduced at year end to $3,886,098, and this balance had been further reduced to $3,544,036 as of last March 15.

Braniff: Braniff Airways reports a net profit after taxes for 1949 of $221,595, as against a 1948 profit of $191,634. The profit on the domestic division was $446,000 while the Latin American Division showed a loss of $224,400. The 1949 figures do not include unrealized earnings consisting of the amount due from the government when a permanent international mail rate is fixed. Operating revenues for 1949 were $18,438,140 and operating expenses were $17,971,424, as compared with $14,632,977 and $14,128,160, respectively, in 1948.

'49 Manufacturing Reports

With several major companies yet to report, it is indicated that the nation's aircraft manufacturing industry made a net profit of well over $20,000,000 last year. In all probability, every major plane builder ended the year in the black.

Annual reports and news releases made public last month showed the following results for major aircraft and engine manufacturers:

Lockheed: Lockheed Aircraft Corporation and its wholly owned subsidiaries reported a net income of $5,490,760 after taxes of $1,069,012, with gross sales of $117,666,803 for the year 1949. This compared with a net of $6,239,380 on sales of $125,620,700 in 1948. Earned surplus at the year end amounted to $34,767,513, as against $31,428,933 at the end of 1948. The company's backlog of unfilled orders at the end of the year totaled $229,746,000, an increase over the $195,901,000 reported a year previous. All the company's bank indebtedness was liquidated during 1949.

Martin: The Glenn L. Martin Co., which suffered a net loss of $16,711,000 in 1948, made a strong comeback last year with net earnings of $5,131,500. The company's net working capital increased from under $10 million to above $11 million during the year, unrestricted cash increased substantially from $4.4 million to more than $8.3 million, and indebtedness to the Reconstruction Finance Corporation was reduced during the year from a balance of $16.4 million to $3,000,000. Backlog of undelivered orders at the year's end amounted to $71,655,000.

Boeing: Boeing Airplane Co. reported net earnings of $4,411,348 on sales and other income of $287,012,824 for 1949, compared with 1948 earnings of $1,715,908. Backlog at the end of the year was $365,804,690, all but a small portion of which was military business.

Convair: Consolidated Vultee Aircraft Corp. reported its first profitable year since 1945. It had an operating profit of $3,713,156 on net sales of $197,000,000 for the fiscal year ended November 30, 1949. In 1948 it had a net loss of $11,978,975 on sales of $112,351,424. Backlog as of November 30 was about $207,000,000, nearly all of it military orders. As was the case with Martin, the commercial model inventory write-offs that contributed to the 1947 and 1948 losses were not in the picture last year.

Ryan: Ryan Aeronautical Co. earned $358,052 in the fiscal year ended last October 31, the annual report showed. Earnings for fiscal 1948 amounted to $356,703.

Bell: Bell Aircraft Corp. reported a net profit of $204,142 on sales of $11,829,475 for the year 1949, compared with a net loss of $347,122 on sales of $15,329,230 for the previous year.

Piasecki: Piasecki Helicopter Corp. reported a net profit after taxes of $105,946 for the calendar year 1949, compared with 1948 earnings of $65,657.

Between the Lines:

Combating the Snorkel

By James J. Haggerty, Jr.

ONCE DORMANT as a practical aerial weapon, the blimp has come back into the Navy air picture. The Navy's all-out program to develop submarine countermeasures brought about a careful re-evaluation of the lighter-than-air ship, and as a result the Navy has decided to buy four new blimps at a cost of $4,000,000 each in the coming fiscal year.

The new blimps will be built by Goodyear Aircraft Corp. of Akron, O. The blimp type has not been identified, but it is believed they will be of the same class as the 324-foot "N"-type blimp Goodyear is now building for the Navy under a contract let last year. The "N" blimp, which has a helium capacity of 825,000 cubic feet, is the largest non-rigid lighter-than-air craft ever built. Although the Navy has been operating a handful of World War II blimps, the new procurement is the first indication that lighter-than-air equipment will be a permanent part of the anti-sub picture.

The first word that the blimp was back in the picture came from Vice Adm. John H. Cassady, Deputy Chief of Naval Operations, Air, who told a Congressional committee that "in certain phases of anti-submarine warfare the lighter-than-air ships are more effective than heavier-than-air planes and an increase in lighter-than-air is planned." Whether this increase will be larger than the four ships mentioned the admiral did not say.

The blimp obviously has certain advantages over heavier-than-air craft. First, its slow speed makes it a more efficient observation platform. Second, its tremendous range capabilities permit it to fly much longer patrols than even the longest-ranging airplanes. Third, and perhaps the most important, its size permits it to carry considerably more weight in radar and other detection equipment. Further, although the slow-moving blimp is an easy target for a surfacing submarine, new sub design has eliminated that disadvantage, for the latest type subs carry no deck guns; the deck has been cleaned of protrusions for faster underwater operation.

Snorkel Development

The planned procurement of the new blimps is only one phase of the Navy's current drive to develop an efficient anti-submarine force. The object of all this attention is a comparatively new submarine development—the snorkel. The snorkel is a breathing tube which permits the sub to operate on diesel power underwater; its installation on a sub deck looks like an inverted pair of binoculars—one tube for air intake, the other for exhaust. Subs have two types of power; diesel and electric. The old type subs used to operate on diesel power while surfaced, but had to switch to battery power when submerging, since there was no air available for the diesels. When the battery power was exhausted, the sub had to surface and run a while on diesel power, in order to recharge the batteries. This, obviously, made it a highly vulnerable target.

The value of the snorkel as a weapon is obvious. Through its breathing tube, the snorkel sub can operate under water on diesel power indefinitely. Thus submerged it presents a real challenge to detection equipment since on a calm day only about four feet of its breathing tube appear above the surface. Its ability to escape detection was well evidenced during the recent Operation Portrex, a joint Army-Navy-Air Force operation in the Caribbean, which we attended. During that operation, an "enemy" snorkel crept through four layers of anti-sub defense and "sank" a command ship, a heavy cruiser, a transport, and two oilers and inflicted 20% damage on the battleship Missouri, according to the umpires' estimates.

But snorkel operation need not necessarily be confined to the destruction of shipping. It becomes a more formidable weapon when you consider that an atomic missile can be fired from its deck. Our own Navy proved that in recent tests with the USS Carbonero, in which heavy missiles were successfully fired from the sub's deck. Remember, too, that the Japanese built a submarine which carried three bombing planes and fired them by catapult. There is no reason to suppose that our Russian friends are less intelligent than the Japs, particularly after a seven-year lapse. Being fanciful for a moment (though not at all fantastic), imagine a large Russian missile-firing or bomber-carrying sub surfacing in the middle of the Hudson River and you'll get an idea of the urgency of developing more efficient anti-sub measures. Our observations at Portrex convinced us that the snorkel sub has little to worry about in the submarine hunter-killer equipment, both air and surface, in operation today.

Four Anti-Sub Types

As we said, blimp operation is only one phase of the aviation end of anti-submarine warfare. As we see it, there are four distinct types of contra-sub aircraft in the planning book. First, for in-close detection work, operating from a carrier deck, is the hunter-killer helicopter, another brand new anti-sub development about which the Navy is very hush-hush. The Navy has now called for a hunter-killer helicopter evaluation, and intends to order production quantities of the winning helicopter for operational service. The advantage of the helicopter, like the blimp, lies in its ability to fly slowly. Its maneuverability will protect it from even those subs which have deck guns. The hunter-killer helicopter will carry radar equipment (close to 1,000 pounds of it) and other detection devices, as well as a depth charge or torpedo to destroy the sub.

Next comes the Grumman AF Guardian anti-sub team. The AF's are single-seat, single-engine aircraft of a size and range comparable to that of the war-time torpedo bomber. One of the pair carries the detection equipment; the other, summoned by its partner, carries the destructive material. The third in line, from the range standpoint, is the long-range patrol bomber, the standard model of which is now the Lockheed P2V Neptune. The Navy will soon start getting deliveries on a new model of this plane, the P2V-4, which will have all of the latest sub-detection devices.

Besides the standard snorkel-detecting radar equipment, the P2V-4 has newly-developed magnetic detection gear and radio sonobuoys. The magnetic detection gear, details of which the Navy is keeping quiet, can locate a submerged submarine which has not even the snorkel tubes above water, a feat not possible with radar equipment due to water's resistance to radar waves. The sonobuoys are carried internally and dropped in an area where a sub is located. Floating on the surface,

(*Continued on page* 20)

Production Spotlight

Procurement Schedule Intact: The fiscal 1951 military procurement schedule got past its first Congressional hurdle without being trimmed, as the House Appropriations Committee recommended that procurement be held at the level suggested by the President: 2,200 planes, 29,800,000 airframe pounds. The committee recommended trimming in the Air Force and Navy budgets totaling about $80,000,000, but the cuts are chiefly in personnel and administration.

After clearing the committee, the bill now stands as follows: for the Air Force, $1,365,000,000 for the procurement of 1,383 new planes weighing 21,300,000 airframe pounds, plus $146,000 for guided missiles, electronics and industrial mobilization; for the Navy, $633,000,000 for 817 new planes weighing 8,500,000 pounds, plus $60,000,000 for guided missiles, technical equipment, aircraft modernization and ordnance.

Turbo-Prop B-36: *Reports in the daily press to the effect that a turbo-prop version of the Convair B-36 would be put into production instead of the Boeing B-52 which had been planned as the B-36's successor created quite a stir, but actually the situation has not changed. Convair has submitted a proposal for a turbo-prop B-36, as has practically every manufacturer with a piston-powered airplane in service, but the Air Force has not let so much as an experimental contract for it, much less a production order. Meanwhile, the Air Force is going ahead with construction of the prototype XB-52, a large, six-jet bomber now in the mock-up stage. While the turbo-prop B-36, a logical development of the bomber, appears a good possibility for a production order, the question of a replacement airplane for the piston-powered B-36 is still wide open.*

Modified Mitchell: **North American Aviation** has proposed that the Air Force consider a modified and modernized version of its wartime B-25J bomber as the answer to the twin-engine trainer requirement. North American has modified a B-25J at its own expense and is now on a country-wide demonstration tour with the plane. The company offers three versions: a pilot trainer which can carry five trainees and an instructor; a navigation trainer with four student stations; and a radar bomb trainer with provisions for four students and an instructor. The trainer has a fuselage three feet longer and 15 inches wider in the nose section than the original design. North American suggests the Wright R-2600 or Pratt & Whitney R-2000 as the power plant, but offers four other types. The company has previously been successful in offering a "re-manufactured" World War II airplane for current use; the Air Force is now remanufacturing 700 T-6 single-engine trainers. There seems to be considerable Air Force interest in the twin-engine project, and possibilities of a production order appear good.

Flight Test: *Douglas Aircraft Co.'s YC-124A, prototype of the Air Force's new production heavy transport, is about to go to Edwards Air Force Base, Muroc, Calif., for the second phase of its flight test program, flight under overload conditions. The plane completed more than 30 hours flight time at Douglas' Long Beach plant . . . The first production model of Chance Vought's F7U-1 twin-jet tailless Navy fighter has completed its first test flight at Dallas, Tex. . . . The Air Force has taken two new steps in developing air-to-air refueling techniques. The USAF has awarded a contract to North American Aviation for the installation of in-flight refueling equipment in the four-jet RB-45C, the first time in a multi-jet airplane. At the same time, flight tests are underway at Boeing Airplane Co.'s Seattle, Wash., plant in which a specially modified Republic F-84 jet fighter is refueled in air by a Boeing B-29 tanker, using the Boeing-developed boom refueling system.*

Contracts: **General Electric Co.** was the Air Force's top contract recipient during January, the latest month for which figures are available. GE received over $85,000,000 worth of work orders. The bulk of it, $84,223,137, was for J-47 jet engines and spares . . . **Curtiss-Wright Corp.'s Propeller Division** has received an Air Force order for $11,016,559 worth of propellers, controls and spares for the B-36 bomber . . . **C-W's Airplane Division** received two contracts: $2,000,000 for spares for C-46 Commando twin-engine transports and $1,400,000 for a Boeing B-29 modification program . . . **Aerojet Engineering Corp.** received a $440,000 Navy order for JATO units . . . **Wright Aeronautical Corp.** was awarded $3,000,000 worth of new orders for Cyclone 7 (for North American T-28 trainers) and Cyclone 9 (for Grumman SA-16A amphibians) engines by the Air Force. —J. J. H.

(*Continued from Page* 19)

the sonobuoy contains a microphone which can be lowered to a proper depth. The microphone picks up the noise of the sub's propellers and relays a position report to the airplane. The P2V-4 is equipped to kill the sub as well as find it.

After the P2V comes the blimp. However, the blimp and the helicopter are a long way off; the AF's and the P2V's are now in production. Besides these aircraft specially designed for anti-sub work, other aircraft now being bought "will have configurations peculiar to operations required in anti-submarine," according to Adm. Cassady.

The Navy recognizes the urgency of submarine countermeasure development, and given continued appropriations, should come up with some effective defense measures. We can't help wishing, though, that some of the energy the Navy devoted to trying to crash the strategic bombing field before it was upended had been diverted to anti-sub effort a couple of years ago. If it had, we might have been in better shape today.

Prototype Support Approved by ACC

The top members of the Air Coordinating Committee on March 22 approved unanimously proposed legislation which would authorize a five-year, $12,500,000 program covering the testing of prototype transport aircraft. The program would be under the direction and supervision of the Administrator of Civil Aeronautics.

The proposed bill will now be forwarded to President Truman through the Bureau of the Budget. If in line with the President's program, it will be introduced at this session of Congress.

It was learned that the Department of Defense, represented by Under Secretary Stephen T. Early, voted for the proposal. This marked the first time that Defense has made its position known on the testing measure.

The CAA Administrator would be authorized to spend funds for the testing of new transport types, and funds would also cover minor experimental modifications during the testing period. In deciding which types would be tested, the Administrator would consult with Defense, CAB, NACA and other interested agencies.

It is believed that the legislation would also be broad enough to cover testing of certain changes in existing transports. For example, the installation of turbo-prop engines in place of reciprocating engines in a present-day aircraft would make it eligible for testing under the program.

The Helioplane--Design for Better Flying

By Richard G. Worcester

If you take each feature of the Helioplane and look at it in turn you find that there are a few novelties, but interest lies mainly in how these have been blended into established aerodynamic principles which have been known, literally, since the time of the Wright Brothers.

These design combinations should enable the Helioplane to operate more flexibly because it is less dependent upon the locations of airfields and all the trouble which appears to be inevitable when aircraft arrivals and departures are strictly organized.

Perhaps a more important thing, too, is the way these design characteristics make the Helioplane much easier to fly. Elimination of the stall alone is enough to open new possibilities commercially. Absence of the hoped-for lightplane boom after the war may be due more to lack of safe aircraft able to fly slowly in bad weather than to the high cost of private ownership.

The high lift fixed wing aircraft is cheaper than a rotorcraft and yet more useful than a conventional fixed wing type. But the immediate future of the Helioplane at its present stage in evolution rests upon the speed and ease with which the product can be cleared by the Civil Aeronautics Administration. There has recently been much anxious talk about how the interests of public safety have tended to militate against the CAA accepting aerodynamic innovations.

Tests CAA Flexibility

Owing to the slender resources of the lightplane industry people are wondering seriously whether CAA officials realize how sluggish handling can all but kill this hopeful project. Anyway, the certification tests of the Helioplane will demonstrate quite clearly whether the CAA is flexible enough to meet the needs of the day or whether this organization like the Brontosaurus, has become too clumsy for its environment.

The Helioplane is not the first machine to fly at less than 30 mph nor is it likely to be the last. But unlike the German Zaunkönig, it is a practical vehicle, and, unlike the British Prestwick Pioneer, the slow flying gear has been adapted to an existing design—the Piper Vagabond—so that Aeronca, which holds production rights, should be able to undercut by half the price of $20,000 quoted for the British slow flier.

Indications are that Fairchild may use the Helioplane license rights to design a four engined military transport for tactical use in carrying men and equipment to the forward lines from the advance base airfields. The small rate of sink, large diameter propellers, the steep descent, the absence of trim changes, the high lift coefficient and stall-proof characteristics could all be used in a larger design.

Why Bail Out?

	Vertical Velocity
Parachute	16 ft./second
Helioplane	11 ft./second

(As kinetic energy varies with the square of these forces, the landing thump in the Helioplane is about half that taken by human legs at the end of a parachute jump.)

Design Characteristics

It is not enough only to increase the lift coefficient but this should be done without excessive wing modifications and arranged so that the pilot can, in practice, use as much of the lift as possible. Although it is hard to prove it, the $C_{L\ max}$ of the Helioplane is over 3 and probably about 3.2 engine on.

Fitting full span slats has been adopted for stall prevention rather than as a way of increasing the lift coefficient. This is because the Helioplane, when flying at minimum speed, will reach an angle of attack of about 14 degrees, which is far less than the theoretical angle of attack necessary to stall at about 29 degrees.

The fact that the pilot cannot approach the stalling attitude means that he can carry out steep turns without thinking and safely fling the machine into the opposite direction while flying at minimum speed. This is important, for instance, while following a valley which starts climbing up into a cloud.

At the minimum speed the greatest angle of descent is 14 degrees which can provide the aircraft with an unusually steep approach path and yet, with a vertical velocity of only 11 ft./second, it is a very gentle glide. The undercarriage was designed to withstand a vertical velocity of 11 ft./second, but in fact only realized about 10 on the prototype. Aeronca may arrange to increase it to 12 ft./second so that "parachute landings" (i.e., without stick action) could be made without damage to the structure and undercarriage.

The telescopic struts absorb the energy pneumatically, using a 9-inch leg travel with a low rebound ratio of probably nearer .2 than .3. The undercarriage is located at 34 degrees from the c.g. This will be recognized as a large angle by U. S. standards which in turn is more than European practice. So not only is it impossible to tip the aircraft on its nose in landing but it is impossible even to get the tail up during take-off.

Flap Compromise

The full span single slotted flaps extend 26.6% of the wing chord, and the greatest angle of flap depression of 30 degrees is a compromise between getting a high $C_{L\ max}$ (which would call for lowering the flaps to over 40 degrees) and excessive drag. Aileron action is built into the flaps and there is

Photo by Martin Bovey, Jr.

LIFT SPOILERS, which are being pointed out by Dr. Lynn Bollinger, are Dr. Otto Koppen's answer to the problem of excessive yaw developing from high asymmetric parasite drag due to the ailerons of the Helioplane at very low speeds. They replace an earlier idea of interlocking the lower segment of the rudder with the ailerons.

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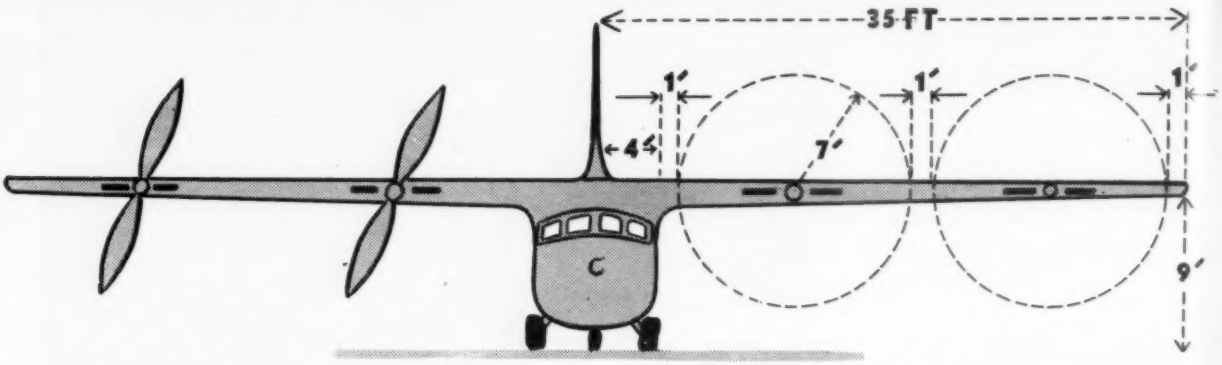


A FOUR-ENGINED light transport, such as the staff artist's sketch above, could be built to use the slow flying features of the Helioplane. The large-diameter propellers would have to be spread along the wing using full-span slats and slotted flaps. If flat engines of 250 hp. were used, the maximum weight would be about 15,000 lbs. With a lift coefficient of over 3, the stall-proof slow speed of under 40 mph. would offer an entirely new type of feeder operation.

no differential in the ailerons; this in a small way contributes towards economical production.

Full flap depression and full lateral control puts one flap down to 40 degrees and the other 20 degrees down. Naturally designer Dr. Otto C. Koppen ran into the familiar trouble about yaw developing from the high asymmetric parasite drag at the downgoing aileron. The resulting yaw was countered originally by interlocking the lower segment of the rudder with the ailerons so that with flaps up the rudder would move 7 degrees at application of full aileron increasing to 30 degrees (the full travel) when the flaps were fully down.

This idea was, however, replaced by the use of lift spoilers which rise up to their full angle of 85 degrees (Aeronca might make this a healthy right angle) when the aileron is fully "up" at 20 degrees down with full flaps. The spoilers are located at 65% chord and they have proved to be a practical answer to this age-old difficulty.

Another old problem was to overcome the lack of thrust at low speed and at the same time to provide increased engine cooling. These two questions were tackled together not by increasing engine power (which has often been tried in the past and is apt to pose more difficulties than it solves) but by retaining the size of engine which fits the cruising speed of the aircraft and increasing propeller efficiency by reducing rotational speed to 1200 rpm at full throttle and by using a large diameter of 9 feet which the designer states increases the efficiency "75% more than a conventional propeller."

An incidental advantage of the type of propeller is that it is quieter, which is important when it is remembered that the Helioplane is designed to operate closer to populated areas. The propeller has only a 9-inch ground clearance tail down and none tail up. However, as previously mentioned, the pilot cannot get the tail up at landing and when taking off the mainwheels lift off before the tailwheel even if the full elevator movement of 7 degrees down is used during the take off. So the Helioplane does really meet the CAA 9-inch ground clearance requirements—but in an unusual way.

The large propeller diameter was possible by raising the thrust line which affords the pilot a better view over a nose less obstructed by the horizontally opposed cylinders. In the Helioplane 10 auto fan belts are used to reduce the propeller rotational speed at the Aeromatic hub.

Each belt takes its ordinary load of 8 hp when driving the fan for which it was designed and although fan belts are currently changed every 30 hours, the absence of wear suggests that they could last the normal overhaul life of the engine which is around 600 hours. The belt drive is quieter than gears and the principle goes straight back to aviation at the turn of the century. Aeronca can use belts, gears or anything it likes so long as the same objectives are attained.

A long chord muffler is fitted which quiets the exhaust noise and the 9 degree exhaust cone from the stack pipe ejects into the larger diameter muffler and draws cooling air through the engine to lower the gas temperature in the main mixing chamber. With gas temperatures of around 350 degrees at the exit, the life of the muffler (despite the .016 inch sheet) with jet pipe lagging should set new standards of durability for this type of component.

The World's Slow Fliers

Wright Biplane	26 mph	TAS
Helioplane	27 "	"
Zaunkoenig (German)	29 "	"
Pioneer (Br.)	30 "	"
Slingsby Motor-Tutor (Br.)	31 "	"

An important thing in the Helioplane is to avoid large changes in trim with various changes of power and changes of flap position. This need has been recognized by keeping the propeller thrust line high with the belt drive and also by building a downward angle of thrust at the hub of —5 degrees.

Torque effects during take-off, judging by the appearance of the aircraft, would seem high but the designer felt that by lengthening the fuselage the yaw effectiveness would be raised to take care of any swing on take-off and he did not offset the propeller hub. When pilots came to fly the machine this was found to be an accurate prediction and Aeronca has not been asked to put any angle on the hub or in the fin which, along with the rudder, is more or less standard fitting.

Fuselage Lengthened

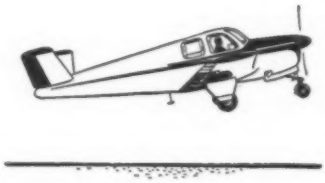
The fuselage behind the rear cabin has been lengthened 41 inches and this longer arm has in the past proved a sound feature which not only goes back to the First World war with its Avro 504 but is expressed in such aircraft as the Douglas Skyrocket. It also enables the tail surfaces to take the special characteristics of the Helioplane without structural alterations of any significance.

Apart from these changes the Helioplane is built from standard parts and, although it looks very different from any known lightplane, it is less changed from a production standpoint than its appearance would suggest.

The wing is an ordinary airfoil section with thickness ordinate around 10% chord. A standard wing tip and bracing struts are used.

The flying controls, engine mounting, cabin and fuselage are all retained with the fuel tank and, as mentioned, the tail. The additional piece in the rear fuselage is made to fit into existing production.

This greater-than-ever Beechcraft is a better-than-ever value!

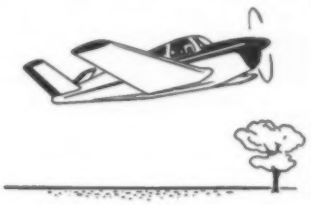


Increased Horsepower Rating at Take-off

Take-off horsepower rating is now 196 hp at 2450 rpm, providing improved take-off performance without sacrifice of long engine life, low operating and maintenance costs.

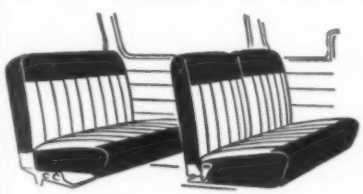
Increased, Faster Flap Travel, New Beechcraft Propeller

Improved short field take-off and landing performance is made possible by greater degree of flap travel and the greater static thrust of the new Beechcraft propeller.



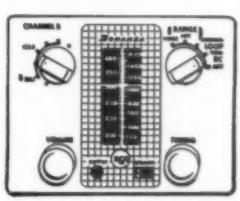
Faster Landing Gear Action — Both Up and Down!

The already quick action of the Bonanza's retractable tricycle landing gear has been speeded up even more. At 105 mph the gear lowers in 7½ seconds, goes up in 8½ seconds!



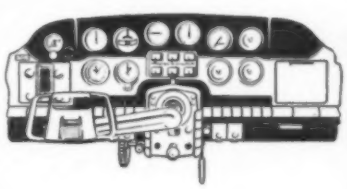
New Upholstery Combinations and Interior Designs

New combinations of blue, green and brown materials of warmth and beauty especially chosen to blend with the new range of exterior colors. Smart leather seat caps, new arm rests for all passengers.



New Radio Includes VHF Marker Beacon

The selection of the RCA 116 transceiver as standard equipment provides regular low-frequency operation for navigating four-course radio range, homing on range and standard broadcast stations; adds VHF channels.



New Instrument Panel Design, Safety-Type Wheel

New instrument panel design retains famous Bonanza operating convenience and efficiency, adds smarter-than-ever note to cabin appearance. And there's a new safety-type control wheel to match!

It has no equal in performance, speed, economy, strength, safety, style and comfort!

The new B35 Beechcraft Bonanza exceeds all promises for a speed-with-economy plane that's roomy, comfortable and easy to fly! New performance features at moderate horsepower add to its versatility and safety, hold operating and maintenance costs at a *business economy* level! New operating conveniences and luxury appointments plus scores of refinements call for a personal inspection because there's room here to show only a few. See it! Get all the facts! You'll agree this greater-than-ever Beechcraft Bonanza is a better-than-ever value!

Get all the facts! There are hundreds more — about the extra advantages of the new Model B35 Beechcraft Bonanza. Check with your nearest Beechcraft distributor or dealer, or write for complete information on your company letterhead to Beech Aircraft Corporation, Wichita, Kansas, U.S.A.

Top speed, 184 mph
Cruising speed, 170 mph
Range, 750 miles
Fuel economy, 9.5 gph

Beechcraft BONANZA

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

Engineering Analysis:

UAL Study Shows Advantages of Turbo-Prop Transports

By William D. Perreault

Aircraft manufacturers are now working toward the goal of installing turbo-prop engines in present-day fuselage designs. For some time U. S. manufacturers seemed more interested in skipping the turbo-prop engine and going directly to the turbo-jet engine design.

There is a little doubt that the promise of economy of operation apparently available in the Allison T-40 turbo-prop engine is a major factor in the redirected interest but there appear to be other equally important factors. Some of these factors were ably pointed out by Ray Kelly, superintendent of technical development for United Air Lines, in his comments on the 13th Wright Brothers Lecture.

Kelly

Kelly's comments disclosed for the first time the extent to which UAL has investigated the field of turbine-powered aircraft. While A. E. Russell, chief aircraft designer for Bristol Aeroplane Co. and author of the 1949 Wright Brothers Lecture, indicated that gusts do not present serious problems in the large turbo-prop powered airplane at 400-500 mph, UAL's investigation had indicated that it would be necessary to keep the passengers in such transports strapped in by their seat belts at all times. The UAL executive found considerable hope in Russell's predictions.

Like the British designer, Kelly saw greater promise in the turbo-prop-powered commercial transport than in those powered by turbo-jet engines. He cited the possibility of improved take-off and climb characteristics of the turbo-prop as a major accomplishment. It might permit faster and heavier transports to operate out of existing airports. The ground handling characteristics should parallel those of reciprocating engine transports and the retention of the reversible or braking propeller is favorable.

Might Compete Today

On a ton-mile basis, Kelly indicated that even now the turbo-prop transport might compete favorably with reciprocating engine designs and with improvements in engine efficiency the specific fuel consumption might prove to be lower than that of present-day transports.

But the UAL engineer was concerned over the possible loss of flexibility which either type of turbine powerplants might impose on the airlines. Only in the last few years have the airlines enjoyed improved schedule reliability, efficiency, passenger comfort and independence of weather and this only through the introduction of post-war equipment: the Douglas DC-6, Lockheed Constellation and Boeing Stratocruiser. Would this be lost with the introduction of turbine-powered transports? The UAL studies indicated this would probably be the case.

On the same basis that Kelly felt the airlines could use a 100-mph increase in cruising speeds, which the turbo-prop might provide, others have pointed out that even higher speeds are desirable and that the turbo-jet engine is the only source of these speeds. UAL's studies showed the fallacy of the high cruising speeds as applied to airline routes.

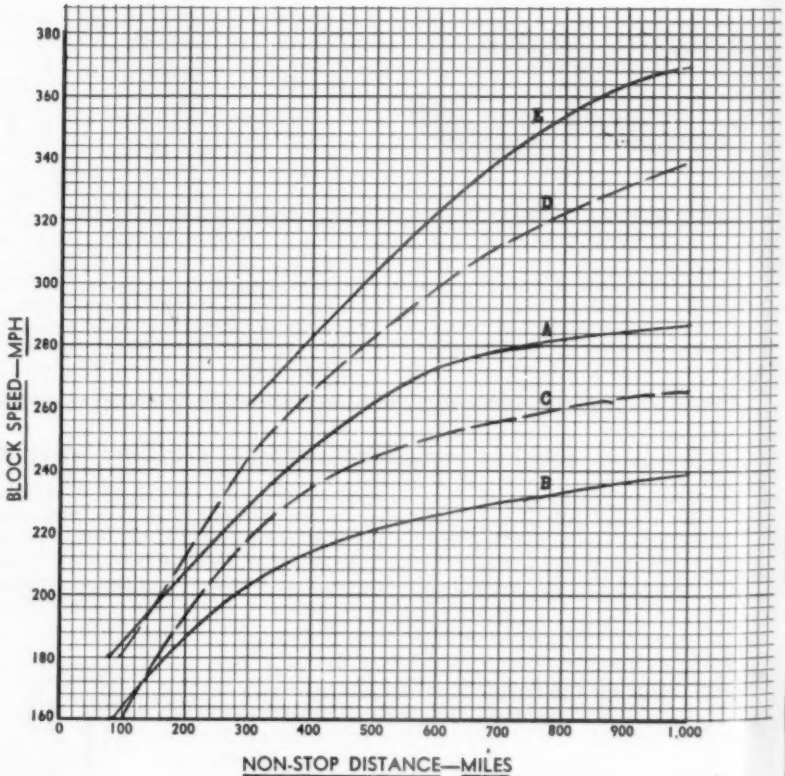
Short-Haul Speed Drops

One turbo-jet transport studied had a cruising speed of 470 miles per hour, an impressive figure. But operated on a 300-mile route segment this plane made a block speed of 262 mph. This reflects the 11-minute taxi and run-up time and the time required to climb and descend from the cruising altitude of 40,000 feet. While this is averaged out on longer flights, the cruising speed for a 500-mile block segment is 304 mph, for an 800-mile segment 354 mph and even at 1,000 miles is only 369 mph, according to Kelly.

Another turbo-jet design, with a cruising speed of 400 mph and cruising altitude of 30,000 feet made good a block speed of 244 mph at 300-mile range, 283 mph on a 500-mile segment, 322 on 800 miles and 339 over the full 1,000 miles.

Reference to the accompanying chart shows the relatively high block speed of the turbo-prop engine in comparison to its cruising speed on the various

Block Speed Comparison



Airplane	Taxi & Run-up	Cruise BHP/Eng.	Total Cruise BHP	Cruise Speed	Cruise Altitude
A	11 min.	980 + thrust	3920 + thrust	320 MPH	18,000 Ft.
B	8 "	1000	2000	253 "	18,000 "
C	13 "	1000	4000	283 "	18,000 "
D	11 "			400 "	30,000 "
E	11 "			470 "	40,000 "

route segments. Operating at a cruising altitude of 18,000 feet and featuring a cruising speed of 320 mph, the turbo-prop transport made good a block speed of 228 mph at 300 miles, 262 mph at 500 miles, 282 mph at 800 miles and 287 mph at 1000-mile segment lengths. It can readily be seen that the accomplished block speeds of the turbo-prop show promise of creating more ton-miles per unit of time even on moderate route lengths than does the turbo-jet.

Less Speed Spread

Within its natural speed limitations the reciprocating engine transport shows relatively small spread between cruising speeds and accomplished block speeds. With a cruising speed of 278 mph and cruising altitude of 18,000 feet, the reciprocating engine transport makes good 218 mph at 200 miles, 245 mph at 500 miles, 260 mph on 800-mile segments and 265 mph on 1,000-mile segments. A fifth transport of reciprocating engine design, with a cruising speed of 253 mph averaged 203, 221, 233, and 239 mph on similar route segments.

It's interesting to note the practical application of these ships to a commercial operation. The 60,000-pound jet transport has a payload of 12,800 pounds up to 440 miles range while providing for suitable reserves. This is reduced to 8,900 pounds payload at 690 miles which is the maximum range of this airplane, while maintaining adequate fuel reserves.

The 50,000 pound turbo-prop transport has a payload of 11,850 pounds for distances up to 420 miles after which payload must be sacrificed for additional range. Consequently the payload is reduced to 9,000 pounds at 760 miles range 8,000 pounds to 880 miles and 7,000 pounds to 1,000 miles.

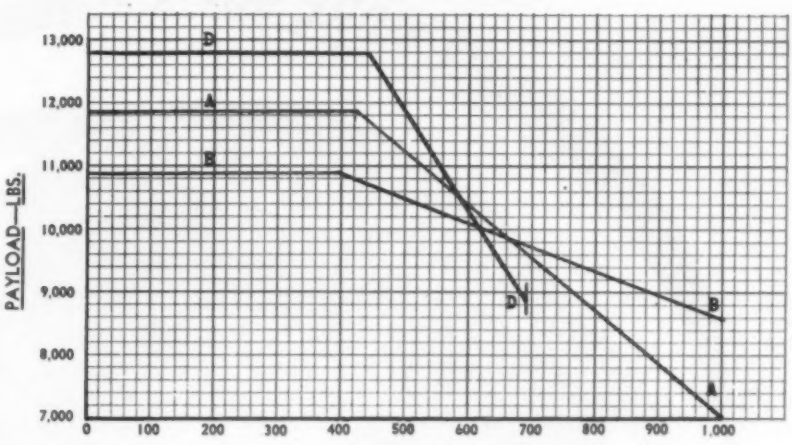
Maintains Payload

The reciprocating-engine-powered transport, grossing 43,000 pounds, and cruising at 253 mph has a payload of 10,875 pounds to 390 miles and this is gradually reduced to 9,000 pounds at 900 miles range, 8,600 pounds at 1,000 miles. It will be noted that the reciprocating-engine-powered transport has less payload to start with but maintains a larger portion of the maximum payload over the full length of the flight.

Kelly disclosed one other major investigation made by UAL. That was the importance of headwinds to operations in the 30,000-foot altitude range where jet-turbine transports will probably operate. (There are some turbo-prop engine designs that cruise at 22-25,000 feet altitudes).

Kelly accompanied his remarks by charts showing the average wind velocities over seven of UAL's route segments during both summer and winter conditions. Drawn up by UAL meteorologists the charts show that during 19% of January 1947 there were headwinds

Payload Range Comparison



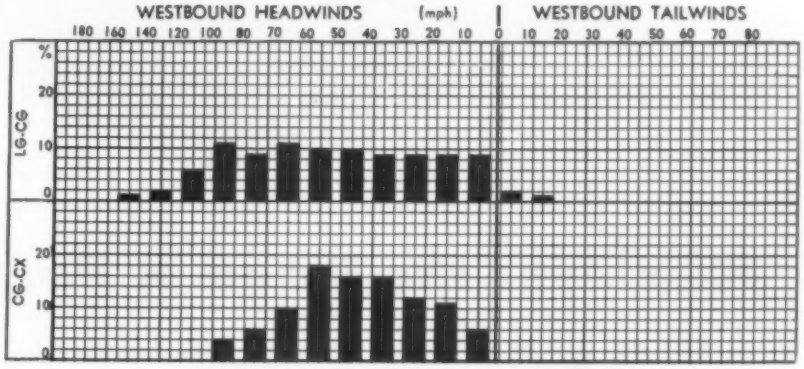
NON-STOP DISTANCE—MILES

RESERVE FUEL: 200 MILES + 45 MINUTES + 10% TRIP FUEL

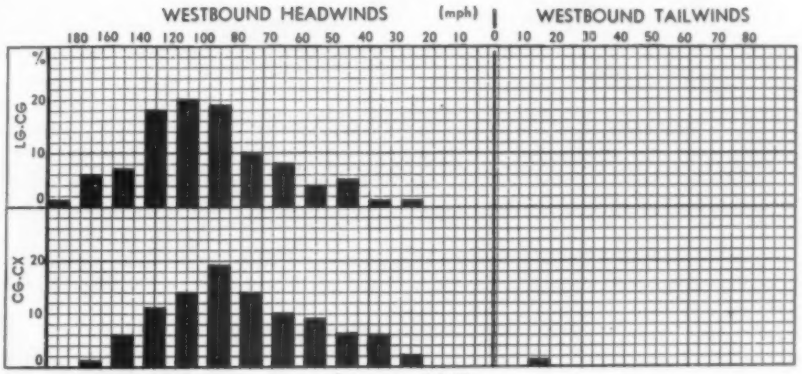
	A	B	D
Take-off Gross Weight	50,000 lbs.	43,200 lbs.	60,000 lbs.
Operating Wt. Empty	32,900 lbs.	29,000 lbs.	32,100 lbs
Cruise Speed	320 MPH	253 MPH	400 MPH
Cruise Altitude	18,000 ft.	18,000 ft.	30,000 ft.

(Excluding Fuel Required for Missed Approach.)

Distribution of Wind Components—30,000 Ft.



June, 1946



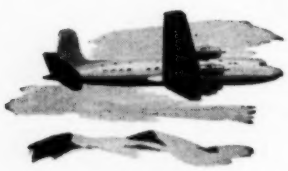
January, 1947

UNITED AIR LINES' graphs plotting percentage of summer and winter headwinds on its New York-Chicago (LG-CG) and Chicago-Cheyenne (CG-CX) routes at 30,000 ft. Note that, on the New York-Chicago segment, headwinds exceeded 80 mph for more than 70% of the month of January.

. . . Bee

is Su

Whatever the Plane or Purpose . . .



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Technical News Digest

• **The A. V. Roe Canada Limited C-102 Jetliner** will be in New York at the International Airport on April 20th as one of the demonstration aircraft to be shown to members of the Society of Automotive Engineers during their National Aeronautic Meeting and Aircraft Engineering Display to be held April 17-20th.

• **VASP, a Brazilian airline** with headquarters in Sao Paulo, has contracted with Saab Aircraft Co. for the purchase of six Saab Scandias. Price of the transaction is reported at about $2,000,000. The planes will be equipped for 32 passengers and will have extra fuel tankage. Included in the order is the Scandia which recently made demonstration tour of the U. S. Ten Scandia's are also on order for ABA, Swedish Airlines.

• **The de Havilland Comet,** Britain's four jet passenger transport, has flown from Hatfield, England to Rome in two hours and 11 minutes averaging 439 mph for the 940 mile trip. It made the return trip in two hours and two minutes. Indications are that the Comet may make its first flight to the North American continent in June when it may be demonstrated at the annual Aviation Writers convention in Montreal.

• **CAA has warned the airlines** against accepting for shipment fruit dusting compounds containing parathion, a compound which has been known to bring about illness of a crew member when the container in which it was being shipped was damaged.

• **Unanimous opposition to CAB's** proposed new mechanic ratings was voted at a recent meeting of the Industry Committee of Airplane and Engine Mechanic Schools, meeting in Washington to discuss the proposal which would create a multiplicity of ratings. The committee considered a draft curriculum to improve A & E schools and plans on circulating final recommendations to CAA approved mechanic schools.

• **TWA has named Aircraft Engine and Parts Corp.,** 345 Madison Ave., New York, as exclusive agent for the sale of five Boeing Stratoliners which the company plans on retiring within the next few months.

• **A 200-horsepower gas turbine** is now under development by Kennametal, Inc., Latrobe, Pa., under the direction of John McVeigh, formerly project engineer with Continental Motors Corp. Constructing main turbine elements of Kentanium, the manufacturer claims it will be feasible to operate at 2,200 degrees F.

• **Sperry Gyroscope Co. has received contracts** from the USAF calling for 1,200 gyrosyn compasses, 714 directional gyros, 595 vertical gyros and a number of gyrosyn indicators. Total value of the production order is in excess of $2,500,000.

• **The Aircraft Division of Pacific Airmotive Corp.** in Burbank has completed the reconditioning of 61 T-7 aircraft for the USAF ahead of schedule. The planes were ferried from AF storage areas in Sacramento to PAC's Burbank plant where they were overhauled and flight tested.

• **Texas Engineering and Manufacturing Co.,** Dallas, Texas, has been awarded a $150,000 contract for reconditioning and overhaul of 20 T-6 trainers for the Air Materiel Command, USAF.

• **General Electric has contracted** with Ryan Aeronautical Corp. for approximately a quarter of a million dollars in jet engine components, supplementing the large volume of exhaust cones, combustion chambers and transition liners now in production. Another $250,000 in exhaust manifold business for Ryan was recently contracted for the USAF.

• **The Vickers Viscount,** promising British turbo-prop transport, was to make a European demonstration tour starting late in March and through part of April. The plane, bearing British European Airways markings, will visit Amsterdam, Brussels, Zurich, Rome, Madrid, Lisbon, Copenhagen, Stockholm, Oslo and Paris. The schedule of dates has not been announced.

• **Chicago & Southern Air Lines will use** flush-type marker antennas on the five Lockheed Constellations now on order. This is the beginning of a C&S program to flush-mount as many of the ten antennas as possible. Cost of radio equipment for the five airplanes, which will include Bendix VHF transmitters and radio compasses and Collins dual automatic omnidirectional range receivers and dual HF transceivers, will be about $155,000.

• **Aeronautical Radio, Inc.,** has moved its offices from 1108 Sixteenth St., N. W., to 1523 L Street, N. W., Washington 5, D. C. Telephone number at the new location remains Metropolitan 3600.

of 80 to 100 mph on westbound flights between New York and Chicago. There were winds between 100 and 120 mph about 20% of the time and winds between 120 and 140 mph another 13% of the time. Some winds as high as 200 mph existed during this period and 6% of the time there were 160-180 mph head winds.

While the condition recorded in June of 1946, the summer month under consideration, were considerably better than the winter operation, there were still high winds; 6% of the time the wind ranged from 100-120 mph, 10½% of the period headwinds were in the 80-100 mph range and another 10½% in the 67-70 mph range; 9% fell in the 70-80 mph category on the New York Chicago segment during this period.

Kelly concluded that it would seem that westbound trips may have to operate at lower altitudes during the winter to avoid these high winds. With the present level of fuel consumption the turbine engine aircraft operating at other than optimum altitude to avoid headwinds will probably meet with adverse economic considerations.

Daily Plane Utilization

International

		Nov.	Dec.
American	2 eng. pass.	1:07	....
	4 eng. pass.	5:34	5:33
AOA	2 eng. pass.	1:24	1:19
	4 eng. pass.	4:52	3:55
Braniff	2 eng. pass.	4:04	....
	4 eng. pass.	6:07	6:08
C & S	4 eng. pass.	8:35	8:36
Colonial	4 eng. pass.	4:01	2:56
EAL	4 eng. pass.	9:12	9:15
NAL	4 eng. pass.	7:01	7:55
	cargo	2:31	5:22
NWA	4 eng. pass.	7:29	7:11
Panagra	2 eng. pass.	4:01	4:12
	4 eng. pass.	6:26	5:50
	cargo	3:49	1:33
PAA			
LAD	2 eng. pass.	3:13	3:14
	4 eng. pass.	7:02	8:10
	cargo	3:48	4:03
Atlantic	4 eng. pass.	4:59	4:44
	cargo	4:15	5:39
Pacific	4 eng. pass.	5:25	5:46
	cargo	2:30	....
Alaska	4 eng. pass.	6:23	6:31
	cargo	6:59	5:55
TWA	4 eng. pass.	6:09	6:30
	cargo	5:04	6:36
UAL	4 eng. pass.	6:15	6:25

Feeder

AAA	DC-3	6:13	5:38
Bonanza	DC-3	....	3:15
Central	Beech A-35	3:48	3:23
Challenger	DC-3	5:39	5:24
Empire	DC-3	5:06	5:23
Mid-West	Cessna 190	2:17	4:06
Monarch	DC-3	7:17	6:26
Piedmont	DC-3	7:52	7:06
Pioneer	DC-3	6:26	6:17
Robinson	DC-3	5:49	5:26
Southern	DC-3	7:26	6:43
Southwest	DC-3	5:11	5:21
TTA	DC-3	6:58	6:37
Turner**	DC-3	2:55	2:27
West Coast	DC-3	3:58	3:48
Wiggins	Cessna T-50	2:33	2:42
Wis. Central	Lockheed 10A	6:52	6:42

* Began operations December 19, 1946.
** Began operations November 12, 1946.

21,100,000 Words Per Month:

Radio-Teletype Speeds TWA's International Communications

By WILLIAM D. PERREAULT

TWA recently opened up the first radio-teletypewriter circuit ever operated between New York and Paris for an individual U. S. commercial airline. This circuit connects some 70 TWA domestic and international stations to provide rapid reservation, operations and administrative message transmission across two continents and three oceans.

An average of 19,000,000 words are handled each month on TWA's domestic communications circuits. The 23,500 miles of Teletype circuits making up the domestic communications systems are divided into two categories, those lines used exclusively for reservations functions and those serving operational and administrative needs.

Goldsborough

Rapid, dependable communications is the key to efficient reservations functions. TWA's Teleflite circuit, as the reservations network is designated, connects all major traffic generating stations with a central reservations control point at Kansas City. The centralized space allocation for all flights enables reservations personnel to give practically instantaneous confirmation of bookings at the time space is requested. The status of each flight is always known.

Within the U. S. efficient communications systems are in use by many lines and are taken pretty much for granted. It is interesting to note how well this standard has been carried over into international operations by TWA and to visualize how domestic and international communications systems have been dove-tailed.

Domestic Message Centers

This can best be visualized by following a typical message. In San Francisco a reservations message relating to an international flight is placed on the interstation longline Teletype circuits. This message is relayed into Los Angeles, one of three domestic message centers on TWA's network. Messages received at Los Angeles are recorded on tapes as they are received.

Communications personnel in the western region at LA transfer the message tape to the transmitting machines where, without retyping, they are automatically relayed to Kansas City. Here again, the message, recorded on perforated tapes, is transferred to the New York interstation circuit and almost immediately received at La Guardia Airport, site of the eastern message center.

The message hasn't been retyped since its initial transmission at San Francisco. At La Guardia Field the perforated tape is transferred from the domestic machines to the overseas radio-teletype circuit. This circuit, recently converted from a manually operated radio-telegraph connection, provides simultaneous transmission and reception to and from Paris at more than 60 words per minute, 24 hours a day, seven days a week.

Rapid Transfers

Within minutes the message which originated in San Francisco has been transferred from the domestic circuits to the overseas circuit. In Paris, TWA's message center on the Continent, Teletype machines start clicking and the message is received. If the message is destined for Paris, the operation is complete. If destined for Shannon, Dublin, Geneva, Zurich, Milan or Rome the message tape is relayed over the European Teletype network. If destined for Lisbon, Madrid, Algiers, Athens, Cairo, Lydda or Dhahran the message is transferred to manual radio-telegraph circuits at Paris.

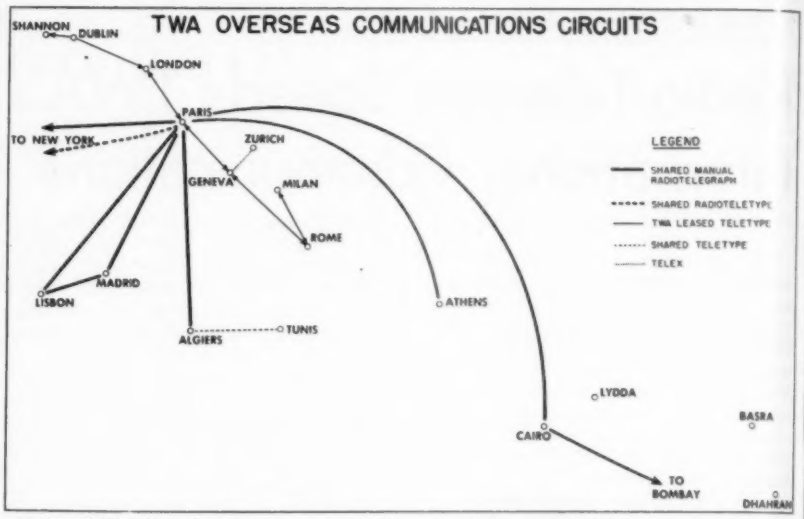
How long does all this take? The elapsed time between transmission and reception of these intercontinental messages is very short. In routine operation a message originating in Kansas City is received at its destination within Europe in less than one hour.

The accompanying chart shows the extent and nature of TWA's overseas communications network. This network handles upwards of 2,100,000 words per month to satisfy the operational, administrative and reservations requirements. Shown on the chart is Dhahran in Saudi Arabia where Trans World Airline uses the facilities of the USAF. Through cooperation with the Egyptian government, services offered by the Cairo/Dhahran ICAO circuit have been expanded to provide a means to exchange other than ICAO-type messages with Dhahran and other TWA stations.

Mailgram Service

With an eye toward economy, TWA has developed an interesting Mailgram service. Mailgrams are messages composed in standard cable form, forwarded from one TWA station to another by means of domestic and European longline circuits and by international air-

Paris Bound—Communications supervisor Floyd Culbertson of TWA is shown at La Guardia Field in New York sending the initial messages over the recently completed radio-teletype circuits to Paris. This is the first circuit of this type to be operated by an American airline between these key cities. The circuit was converted from a previous manually-operated circuit with an increase from 30 to 60 words per minute in transmission speeds. Messages from anywhere in the U. S. are received at La Guardia, placed on perforated tapes, then transmitted over the radio-teletype circuits to Paris. From Paris the messages are re-transmitted over manual circuits to cities on that continent.



THIS SIMPLE line drawing gives some indication of the scope of the communications network maintained by TWA to handle its reservations, operations and administrative needs overseas. The New York line provides automatic radio teletype service for simultaneous transmission and reception at 60 words per minute, 24 hours a day, seven days a week.

craft. This is believed to be the longest tape relay in the world.

The messages, on tape, are placed in special pouches which are assured high-priority handling. The tape is carried by aircraft from New York to Shannon, or vice-versa, and then transferred to the longline circuits. Enroute time, except on the U. S.-Bombay Mailgram messages, is usually less than 24 hours. The high frequency of scheduled flights and the priority of handling generally assures even more rapid service than this.

Reservations messages originating from Europe and affecting some city on the domestic lines, such as Wichita, provide an interesting view of domestic system operation. The message, transferred via Paris to New York over the radio-teletype circuit, is relayed via domestic longlines to the message center serving Wichita. In this instance, it is Kansas City. Actually, in addition to the NYKC circuit, Kansas City has three other major circuits, each serving an operationally designated area.

Selective Circuits

Messages thus received in KC are placed on the circuit serving Wichita and four other stations. In this manner none of the other 18 stations served by the Kansas City message center are affected. If the message affects cities on more than one of these circuits, the tapes are simply relayed to the machines serving those cities. Six cities use Los Angeles as a message center, and 17 cities are connected into the TWA network via the New York center.

Heading up the communications organization responsible for this operation is Paul Goldsborough, general communications manager for TWA. Goldsborough is responsible for supervision and management of this system which, for functional purposes, is divided into three major divisions: wire and plant facilities, ground radio equipment and communications operations.

The wire and plant facilities section, headed by A. K. Singer, is responsible for planning, installation and supervision of system telephone and telegraph services. The ground radio equipment section, headed by W. J. Hepfinger, is responsible for engineering, installation, modification, overhaul and maintenance of ground radio and other electronic equipment. J. W. Stone's communications operations section is responsible for economical operation of system ground communications facilities.

In addition to these organizational subdivisions, TWA's communications manager has an assistant for flight liaison, J. J. Kennhertz, who acts as coordinator of communications and navigational aids requirements for flight operations. In the position of executive assistant, R. W. Lee is responsible for execution of system communications policy, cost control, preparation of communications budgets and office management.

Brazing Report: CAA is distributing Airframe and Equipment Engineering Report No. 44, "Brazing in Civil Aircraft," along with Aviation Safety Release 328. The report is meant to serve as a reference for established aircraft manufacturers and repair stations and to provide basic data on the applications of brazing to civil aircraft manufacture and repair.

The report, primarily applicable to airframe and equipment items, can be obtained on request to the CAA Publications Division, Aviation Information Office, Washington 25, D. C.

Plane News

Alitalia (Aerolinnee Italiane Internazionali) is scheduled to take delivery on the first of three **Douglas DC-4** airplanes from Pan American during March with the final ship to be delivered in April. The Italian line now operates British **Lancastrians** powered by Rolls-Royce Merlin engines on long over-water routes, such as the Rome-Buenos Aires route via Dakar, Natal, Rio de Janeiro and Montevideo.

The Alitalia DC-4's will be long range versions with "E" type fuel systems and powered by P&W R-2000-11 engines. They will be certificated for a gross weight of 73,000 pounds and permit the airline to increase its passenger and mail traffic. Agents for the transaction were A. E. Ulmann & Associates, Ltd.

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For service on its Amazon River, routes, Panair do Brazil has purchased an additional **Catalina PBY5A** flying boat from The Babb Co., Inc. This brings Panair's fleet of Catalinas to five ships, all purchased from Babb.

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Lockheed Aircraft Service is now converting three **Lockheed 049 Constellations** into 81-passenger coach airplanes under a $250,000 contract with Hughes Tool Co. Included in the rework is the addition of seven windows and three emergency exits, new communications installation and standardization of the instruments, electrical and hydraulic systems. The ships will ultimately be delivered to TWA by Hughes.

—TECHNICAL LITERATURE—

TEMPERATURE INDICATORS: General Electric's Meter and Instrument Divisions, Schenectady 5, N. Y., has published a seven-page booklet describing a new line of temperature indicators for industrial and laboratory use. Bulletin GEC 565 includes cold-end compensated thermocouple thermometers for measuring temperatures up to 3,000 degrees F. and resistance thermometers for temperatures up to 300 degrees F.

QUICK-REFERENCE MANUAL: Aerol Co., Inc., 2820 Ontario St., Burbank, Calif., has published a material-handling manual outlining 355 ways to cut inventories. The manual contains information on materials handling equipment including dimensions, load ratings, and code numbers, all tabulated for quick reference. Available on request.

VOLTAGE REGULATORS: Sorensen and Co., Inc., 375 Fairfield Ave., Stamford, Conn., is circulating two catalogs describing the new line of Sorensen electronic voltage regulators. Bulletin No. A-1049 describes and illustrates Sorensen AC regulators and B-1049 covers DC power sources and supplies including many new instruments.

PNEUMATIC TOOLS: The Independent Pneumatic Tool Co., 175 State St., Aurora, Ill., has available three circulars describing Thor Tools. Circular JE-1148 covers the Thor "Upper Line" tools including ¼" and ⅜" drills and new drill stands. Circular JE-1132 describes the Model 35 Sinker Rock Drill and Circular JE-1132 covers a new sinker, air bar feed, pneumatic column and stiffener leg.

METALLIZING COATINGS: Metallizing Engineering Co., 3814 30th St., Long Island City 1, N. Y., has published a report on sprayed metal coatings for protection against corrosion. It is contained in the Metco News, Volume 1, No. 12, available from the manufacturer.

Extra Section

By William D. Perreault

WHILE IN Venezuela last month, fellow staff member Gerry Dobben, met Joseph N. Parrott, executive manager of the Inter-American Safety Council. Parrott was in Caracas to make awards to LAV, AVENSA and TACA for their long records of safe operation under adverse flying conditions. Parrott, a World War I flyer, travels some 35,000 miles annually in connection with his duties investigating safety of operations and making awards. He has had an interesting career in safety work which started 41 years ago when, as an Army lieutenant in Panama, Col. Goethals assigned him to "stop these terrible accidents" in construction of the canal. In 18 months Parrott had reduced accidents 40%. Since 1935, when he retired from the service, Parrott has been using his ability to make people and organizations safety conscious to improve air safety.

Parrott

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On April 1 CAA adopts the 24-hour clock, the military standard for many years past, as the civil standard in aircraft operations. All time references relative to operational information by CAA will be based on the 24-hour clock. This means, as you probably realize, that all times after 12 noon lose their p.m. designation and become hours 13 through 24. One o'clock becomes 1300, 2 o'clock 1400, 6 o'clock 1800, etc. For operations purposes TWA has also adopted the 24-hour clock and other airlines will probably follow suit.

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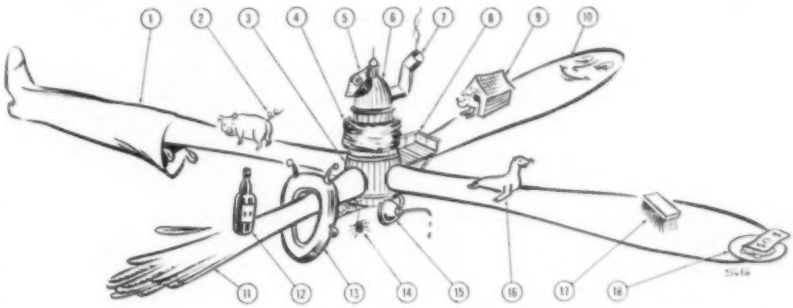
Bee-Hive, P&W's interesting house organ, offers this art work as an example of the draftsman's dream for pictorializing words so that arrows and numbers will not have to be used to identify units and thus "ruin these masterpieces". Here are a few tips: No. 2 is the pig tail, a wire leading to



the blade; 11 is the feathered blade, turned so its leading edge is into the windflow; 17 is the blade brush, contact portion of the circuit carrying electricity from the airplane to the de-icing rubber.

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Ever feel that the engineer who designed that cockpit window had never experienced the "pleasure" of rain washing into the cockpit and onto his clothes? At its El Segundo plant Douglas has rigged up a rain tunnel in which any type of rain from light mist to tropical cloudburst, with wind conditions ranging from zero to 100-mph velocity, may be simulated. It's been designed to work out some problems of aircraft windshield visibility but we'll wager it should correct the gaposis condition that's been haunting flight crews for many years.

Among the Suppliers

Air Associates, Teterboro, N. J., and **Snyder Aircraft Corp.** of Chicago are completing plans to consolidate in one unit to be known as the Snyder Aircraft Division of Air Associates. The new division will be under the administrative management of **Ray Snyder**, with **Russell Fick**, present manager of Air Associates' Chicago branch, as executive assistant . . . **Ralph J. Osborn**, who has been associated with Lockheed Aircraft Corp. for the past 13 years, has been appointed sales manager of **Airquipment Company**, Burbank, Calif., a subsidiary of Lockheed Aircraft Corp. Airquipment manufactures ground handling and specialized equipment for the aviation industry.


Osborn

Cannon Electric Development Co., Los Angeles, Calif., has appointed **Roger Bowen**, formerly with the U. S. Signal Corps, as the new head of the company's Engineering Department. **D. Frank Jackson**, who has been acting chief engineer since 1947, will continue in the department as chief assistant to Bowen . . . **Monsanto Chemical Co.**, St. Louis, Mo., has appointed the **Babb Company (Canada) Ltd.** of Montreal as Canadian distributors of Skylac, fire-retardant and rejuvenating surface coatings for aircraft fabrics.

Charles H. Colvin, vice president, director and manager of eastern operations of G. M. Giannini & Co., Inc., has been elected a director of **Walter Kidde & Co.**, Belleville, N. J. . . . **E. H. Brainard**, who has been connected with aviation for the past 30 years, is retiring on April 1 as Washington representative the **The B. G. Corp.** . . . Continuing its program for expanded production of aircraft assemblies, **Vic Pastushin Industries** is constructing a 12,000 sq. ft. addition to its main plant in Los Angeles.

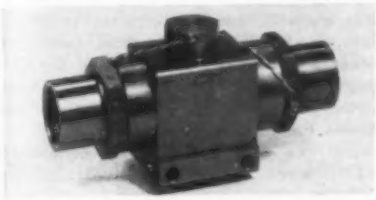
A new division for the rolling of magnesium sheet will be established by **Aluminum Company of America** at its New Kensington, Pa., works in the near future . . . **Burns Aero Seat Co.** recently opened new facilities at Burbank, Calif., providing over 15,000 square feet of space . . . **Airquipment Co.**, Burbank, Calif., recently signed an agreement with **Lockheed Aircraft Service**, who will act as sales representative for Airquipment's aircraft maintenance and ground handling equipment.

The Industrial-Aviation Division of the **R. M. Hollingshead Corp.**, Camden, N. J., has appointed **Robert E. Holmes**, formerly with Monsanto Chemical Co., and **J. M. Weidman, Jr.**, to their sales organization. They will serve the New England and Pennsylvania areas respectively.

Frank P. Herman, executive vice president of **Purolator Products**, Newark, N. J., has been elected to the company's board of directors.

Shuttle Valves

The Parker Appliance Co., 17325 Euclid Ave., Cleveland 12, O., has designed a 3,000 psi shuttle valve meeting aircraft requirements of AN-V-3b and designed to drawings AN6277 and AN-6278. It is built in tube sizes 6 and 8 for tubes of 3/8" and ½" outside diameter. The valve is designed to shuttle



against a closed line and control flow. The shuttle will not unseat from surge flows or negative pressures. The valve shows no evidence of deformation or failure at burst test pressures of 7,500 pounds psi and has a pressure drop less than the allowed maximum of 10 psi at rated flow. It shows zero leakage at static pressures of 5 and 3,000 psi or at proof pressure of 4,500 psi; a zero leakage while shuttling under air or oil pressure; zero leakage and only infinitesimal internal leakage after 20,000 cycles of impulse with peak pressures of 3,750 psi.

Grindstones

Boice-Crane Co., 906 Central Ave., Toledo 6, O., has introduced three new models in its line of wet grindstones, a floor-type unit powered by a ¼ horsepower motor and mounted on a stand, a bench or floor-stand model with two grindstones driven by a single motor and a hand-operated model. All three have a self-adjusting friction drive and constant speed throughout service life. A friction roll drive eliminates two pulleys and two bearings. No countershaft belt is used. Peripheral speed is kept constant, even though the wheel wears, by stepping up wheel rim speed. The

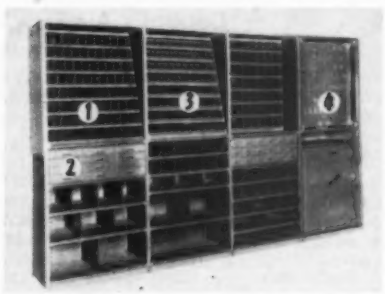
water control makes a waterguard unnecessary and permits a 2½" x 5" tool rest for easier handling. The position of the grinding wheel in relation to the tool rest is adjustable. The wheel face is 1½" wide and wheel diameter is 8 inches. Initial speed is 135 rpm but this increases as the wheel wears to maintain a peripheral speed of 280 feet per minute.

Griptex for Rugs

Adhesive Products Corp., 1660 Boone Ave., New York 60, N. Y., has introduced Griptex for Rugs, a liquid rubber coating which is applied to the backs of rugs to make them lie flat and stop edges from fraying. Griptex is a permanent, self-vulcanizing coating which dries in a few minutes at room temperature. It dries tack free, remains permanently flexible and does not mar floors. It will withstand washing and dry cleaning.

Storage Bins

Lyon Metal Products, Inc., Aurora, Ill., is marketing a re-designed series of bins for tool and stock room use. The tool rack shown is typical of the series. Number (1) provides 88 openings in 8-inch depths with shelf dividers adjustable every inch; (2) provides drawers each with five dividers for subdividing compartment area; (3) has 108



sloping-shelf compartments on eight levels while (4) is a swinging-panel unit allowing 27 square feet of storage area with holes punched every inch for milling cutters, gauges, and templates. Other storage units include drill-rod units, pigeon-hole units and bins for rags and waste.

Power Supply

American Electroneering Co., 2112 S. La Brea Ave., Los Angeles 16, Calif., is marketing a regulated power supply

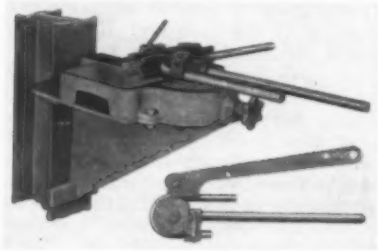
unit providing a choice of 0-500 volts d.c. output, continuously variable, or a low-voltage range at 6.3 volts a.c., center-tapped at 6 amperes unregulated. Regulation to plus or minus ½% or better for any voltage between 30 and 500 volts d.c., for any load from zero to 300 ma. d.c. and for any primary power source variation from 105 to 125 volts a.c. at 60 cps. At maximum rated voltage and load ripple voltage is less than 10 mv. peak-to-peak. Overall dimensions (excluding panel) 17¼ inches long by 16 inches deep by 12 inches high. Panel is 19 inches long by 12¼ inches high by 3/16 inches thick. Four-inch instruments are provided on the panel. Approximate weight is 145 pounds.

Inquiries about equipment on this page may be sent either to AMERICAN AVIATION or direct to the manufacturer.

Readers looking for sources of special equipment are invited to write to AMERICAN AVIATION's equipment editor. Every effort will be made to provide information on manufacturers and suppliers who are in a position to furnish or develop needed airborne or ground equipment.

Tube Benders

Republic Manufacturing Co., 1930 W. 77th St., Cleveland 2, O., is marketing three tube benders for wide-spread applications from ¼ inch to 1¼ inches. The Republic Bench Bender handles from ⅜ inches to 1¼ inches and may be post, bench or stand-mounted. Two models of Hand Benders, 38 and 39, cover ranges from ¼ inch to ½ inch



and from 5/8 inch to ¾ inch respectively. Suitable for bending soft copper, brass, aluminum or full-annealed steel to desired angles.

Metal Hose

Chicago Metal Hose Corp., 1304 S. 3rd Ave., Maywood, Ill., is marketing corrosion-resistant flexible stainless steel hose capable of withstanding high temperatures and pressures while conveying corrosive or searching liquids and gases. The hose is available in sizes from 5/16 inches through 6 inches inside

diameter in one or multiple-ply construction. Wall thicknesses range from .003 inches in single ply to .030 inches in multiple-ply construction and working pressures range up to 2,000 psi. Available with helical or annual corrugations, with or without braid covering, depending upon requirements of the installation. Standard or special fittings are attached to the hose by silver brazing or welding.

All-Cargo Fleet:

Capital's Freighters Haul High % of System Cargo

Major share of the credit for the remarkable increase in air freight experienced by Capital Airlines last year is to be found in the use made of the company's four all-cargo C-54 aircraft.

Flying less than 5% of the system mileage last year, the four C-54's carried 61.9% of all of Capital's air freight traffic, 22.3% of its air express, and 13.6% of the system air mail.

What is more, they brought in air freight revenues totaling close to $1,000,000, which Capital officials said was sufficient to defray all direct flight expense and depreciation and leave more than enough to take care of all indirect expense items applicable to the all-cargo operations, including a proportionate share of general administrative expenses of the company. The actual freight revenue figure was $934,649.

Company records show that of a system total of 7,437,107 ton miles of air freight flown last year, 4,574,570 ton miles were flown by the freighters and 2,862,537 on all other aircraft. (See table.) Considering the fact that Capital operates about 25 C-54's and 25 DC-3's and the fact that the four freighters generally fly only one schedule per day, the record is remarkable.

Capital has concentrated its all-cargo services on comparatively short routes linking the industrial east with the industrial midwest. In this service it uses four C-54's and one C-47. The C-54's are used for a nightly flight in each direction between Newark and Chicago and two for a nightly flight in each direction between Newark and Minneapolis/St. Paul. The C-47 operates a round-trip each night between Washington, Baltimore and Pittsburgh, connecting at the latter point with the C-54 schedules, which also stop at Cleveland and Detroit when there is cargo for delivery or pickup at those points.

Utilization Is Low

This represents about all the utilization Capital gets from its freighters at present, which means that its depreciation charges on this equipment on a revenue plane mile basis are rather high, but there isn't, too much that can be done about that just now. This is because shippers do not get their goods to the airport until several hours after the close of the business day and there isn't time enough for a cargo plane to make a round-trip between Newark and Chicago or Twin Cities in the same night and complete the second in time to catch the first morning deliveries.

Furthermore, Capital's route restrictions prohibit it from increasing utilization by such a method as turning the Newark-Chicago freighter around at Chicago and sending it back to Detroit, Cleveland or Pittsburgh. It has to go all the way or not at all. Capital officials accept this low utilization and high depreciation on its freighters with the feeling that it's better to do this than to run unprofitable additional flights for the sake of increasing utilization.

Capital's Air Freight
(Ton Miles by Month, 1949)

	C-54	All Other Aircraft	System Total
January	269,982	144,942	414,924
February	248,255	147,430	395,685
March	435,196	241,197	676,393
April	453,658	256,283	709,941
May	331,780	186,117	517,897
June	322,793	177,791	500,584
July	301,491	200,219	501,710
August	440,032	257,789	697,821
September	454 597	313,729	768,326
October	445,293	311,573	756,866
November	408,882	306,227	715,109
December	462,611	319,240	781,851
1949 Total	**4,574,570**	**2,862,537**	**7,437,107**

Latest available figures indicated the freighters were operating at an average load factor of about 75%, and that the all-cargo C-54's were yielding a revenue of $1.62 per mile, as against a revenue of $1.65 per mile from the carrier's passenger DC-4's.

For the year 1949, Capital's ton miles of air express traffic were down 9.3% from the previous year's figure, but freight ton miles were up 43.3%. More important was the fact that its freight revenues increased from $1,103,237 to $1,521,334, a gain of 38%.

But how does Capital compare with the industry? Last year it flew 7,437,107 ton miles of freight, as compared with American Airlines' 31,845,434, United's 23,727,149, TWA's 12,035,978 and Eastern's 9,114,101. Thus its cargo traffic was exceeded only by the Big Four. But the ton mile yardstick is, perhaps, not the best one to use when comparing Capital with the Big Four because of the comparative shortness of Capital's average hauls.

According to figures furnished to the CAB in the Air Freight Case, TWA's average length of haul was 1,177 miles, American's 888, EAL's 955 and Capital's 342. Using these figures to convert to miles into tons of freight carried, it would appear that Capital hauled more than twice the *tonnage* of freight flown last year by both Eastern and TWA and about 60% as much as American. One contributing factor was that Capital's average shipment weighed from 225 to 250 pounds, while that of the other carriers weighed only about 150 pounds.

Revenuewise, Capital's cargo showing was even better. Its express revenues comprised 1.96% of its total operating revenues, which was precisely the industry average, and 2.89% of its total passenger revenues, which was a little above the industry average of 2.44%.

But its freight revenues comprised 5.13% and 7.57%, respectively, of its total operating revenues, and its total passenger revenues, while the industry averages were 3.68% and 4.57% respectively.

Apparently, Capital has done a good job of developing cargo volume and cargo revenues. And Guy Springer cargo sales manager, is convinced that the air freight potential, at least in Capital's territory, is by no means nearing exhaustion. He thinks Capital's freight business will continue its upward trend this year, although conceding it may not quite duplicate last year's 43% gain.

Springer has a total of 16 people engaged solely in air cargo sales work, but all other Capital sales personnel make cargo sales as well. Furthermore, the traffic and sales department is cooperating by plugging air cargo continually through direct mail advertising and other media.

Business-Getting Plan

An example of how Capital "digs out" air freight shipments is seen in its assembly and distribution service. Customarily, when a Chicago manufacturer ships to 10 different department stores in New York, an airline takes the separate shipments labeled for the 10 different stores. But under a plan worked out by Springer's department, the manufacturer in Chicago can send the shipments in one load to himself as consignee in New York and Capital will distribute them to the separate stores. Thus the manufacturer is able to take advantage of lower rates for volume shipment.

There there's Capital's all-risk insurance plan for domestic air freight shipments. A shipper with valuable mer-

chandise under former tariff rates could be held responsible for any damage due to faulty packaging. Springer worked out a system with insurance companies for a low premium rate to insure that the shipper would receive full payment for any damage, howsoever incurred. The airline, of course, does not pay any part of the premium.

A distinctive feature of Capital's cargo operation is that it carries almost no flowers or other perishable products, the products commonly regarded as best lending themselves to air shipment, but does carry a lot of automotive parts and other metal products.

Capital's confidence in the continued growth of its air freight business is indicated by its recent decision to convert two additional DC-4's into freighters as soon as the Constellations recently ordered are delivered.

UAL Joins Coach Service Ranks

United Air Lines, last holdout among the Big Four regarding air coach service, was to file tariffs with the Civil Aeronautics Board by March 30 for reduced rate service between Los Angeles and San Francisco/Oakland.

If CAB gives approval, UAL would start selling air coach tickets April 29, with inaugural date of May 14.

UAL proposes to use 70-passenger DC-6's, operating three round-trips daily at one-way fare of $9.95, plus tax, or about 3c a mile. Regular fare is $21.05. The proposed coach fare is the same as that charged by Western Air Lines of California and several non-scheduled carriers between the same points. UAL is converting three of its DC-6's into air coaches.

The flights would operate at any hour and reservations would be taken in advance, according to the company's proposal.

American to Use DC-6's

Meanwhile, American Airlines indicated that it would resume its $110 transcontinental air coach service April 9 with three 70-passenger DC-6's. The DC-4 air coach service had been suspended during the company's strike and instead of going back with the DC-4 equipment American decided to wait for the DC-6's.

American stated it will operate the fastest transcontinental air coach service yet flown. Elapsed time, with one stop at Chicago, will be 10 hours 5 minutes eastbound, and 11 hours 45 minutes westbound. Departures will be changed from night to daylight hours, with takeoffs after breakfast. Telephone reservations, formerly prohibited, will now be permitted.

TWA has set April 30 as the date for putting high-density Constellations into coach service.

Over the Counter

Sales Promotion

TRANS-TEXAS Airways is now using a jeep sound truck as a sales promoter. It's equipped with two loudspeakers, a wire recorder, turntable for records and two microphones. Touring the TTA system, it's telling one and all about the company's recently-authorized excursion fares.

Bob Rowley, **All American Airways'** public relations manager, tells us that AAA is now "placing one large poster, 24 inches by 18 inches, in each plane, similar to the car-card idea. The poster is located on the bulkhead directly opposite the entrance to our planes so that upon enplaning a passenger can't miss it. At the present time we're running a series of posters promoting our own service, but may consider selling the space to an interested advertiser. I think we're probably the first scheduled domestic line to do this" . . . **Northwest Airlines** is launching a record advertising campaign, with a budget of $1,200,000. Campaign will feature a series of full-page color ads in national magazines, and will also include newspapers, cargo and travel publications, trade journals, displays, tie-ins and direct mail promotion. Agency is Cunningham and Walsh Inc., New York . . . **United Air Lines** is distributing an attractive 35-page booklet on the "mainliner Stratocruiser" . . . United is also distributing a new series of full-color travel posters highlighting vacation attractions of cities and areas served by the company. First two posters are reproductions of Hawaiian watercolors by Joseph Feher. Distribution is to ticket offices and travel agents.

We recently saw "Traveling With the Browns," the new color movie released by the Cleveland Browns, professional football team. As a sales promoter for **Capital Airlines**, which hauled the Browns on their trips, and for air transportation in general, it's terrific. There's more Capital in it than Browns, and it will be shown to over half a million people . . . Capital has a record $1,200,000 advertising budget for this year.

Passenger Service

NATIONAL Airlines is using "Music by Muzak" on its deluxe DC-6 New York-Miami "Star" flights. The music is played over the public address system for half an hour after take-off, before landings and during mealtime . . . **Panagra** is serving Chilean vintage wines (red or white) to passengers aboard the El Interamericano between Miami and Buenos Aires. The wines, served at dinner, are bottled specially for the airline in miniature champagne bottles . . . **American Airlines** has concluded arrangements with Hertz Drivurself System and Avis Rent-a-Car System whereby passengers may order rental cars to be available on their arrival at any of American's 60 cities.

Traffic

NATIONAL Airlines is accepting telephone reservations for its coach flights and is selling coach tickets in combination with regular fare service. Action followed CAB's removal of combination fare restrictions. Previously, two separate tickets were required for a trip on which a passenger traveled part of the way by coach. In addition, the passenger was required to purchase a coach ticket before seat space was assured.

TWA has switched its coast-to-coast coach flights from night to daytime because of the popularity of daytime flights. New schedule leaves Newark at 9 a.m., arrives Chicago 12:10 p.m. and Los Angeles at 9:10 p.m. Return trip leaves Los Angeles at noon, arrives Chicago 11:05 p.m. and Newark 4 a.m. . . . **Robin Airlines**, which suspended as a $99 irregular last fall, has resumed operations with a Los Angeles-New York tariff of $75 plus tax. First trip was flown Mar. 17 out of Lockheed Air Terminal with a DC-3 . . . **Argentine Airlines-FAMA** has started weekly DC-6 service between New York and Buenos Aires. Flights leave Buenos Aires at 8:45 a.m., Argentine time, every Tuesday, arriving New York International Airport on Wednesdays at 12:20 p.m. EST. Southbound flights leave New York Thursdays at 1:20 p.m., arriving Buenos Aires 10:55 p.m. Traffic stops are made at Belem and Rio de Janeiro, and refueling stops are Trinidad and Havana. Plan is to expand service to "several flights weekly" during the next few months.

CAB has authorized **All American Airways** and **Robinson Airlines** to omit stops at any scheduled points when no traffic (passengers, property or mail) is available at or destined to such points . . . **United Air Lines** and **Trans-Australia Airlines** have completed an interline agreement . . . **Flying Tiger Line** has signed interline cargo agreements with Braniff Airways, Chicago & Southern Air Lines and New England Greyhound Bus Lines.

Effective Mar. 16, **Pan American** expanded its family fare excursion plan to apply between the U. S. and Havana or Mexico, through Miami and New Orleans gateways . . . **Mid-Continent Airlines** has entered into international family excursion fares to and from Havana in cooperation with **Chicago & Southern** . . . **Wisconsin Central Airlines** has moved its Chicago airport offices to new quarters in the terminal building adjacent to the Marshall Field restaurant.

Airline People

ADMINISTRATIVE

Clark Clifford, former presidential advisor who resigned recently to resume the private practice of law, has been retained, with his partner, **Edward Miller,** as associate counsel for Trans World Airline in Washington.

Douglass F. Johnson, Sherwood A. Nichols and **Samuel L. Wilson** have been elected to the board of directors of

Wilson Johnson

Transocean Air Lines. Johnson is vice president-sales of the company, Nichols is secretary and executive assistant to the president, and Wilson is vice president-operations.

William J. Cizek, who joined Slick Airways last year as claims manager and subsequently was made assistant to the vice president-sales, has gone to San Antonio as an assistant to **Earl F. Slick,** president of the company.

OPERATIONS-MAINTENANCE

Lloyd Rittenhouse has been named station manager for United Air Lines at Bellingham, Wash., replacing **William H. McClure,** who resigned to enter private business.

Willy Van Sittert, former Middle East representative of SABENA Belgian Air Lines, has been appointed operations manager for the line at New York International Airport, succeeding **Robert Mahy,** U. S. operations manager for the past three years. Mahy goes to Brussells as European. operations manager.

TRAFFIC & SALES

M. P. Bickley, formerly manager of air cargo sales for United Air Lines at Chicago, has been named eastern regional manager of sales, succeeding **N. B. Rader,** who resigned recently. **E. L. Dare,** former district cargo manager at San Francisco, has taken over Bickley's former post at Chicago.

Bickley

N. K. Arnold has been appointed manager of cargo sales for Piedmont Airlines. He joined the company in 1947 as station manager at Charlotte and later became regional sales director.

Ronald McVicker, district sales manager for Northwest Airlines in Newark since 1946, has been appointed district sales manager in Chicago. He succeeds Judd Halenza, who transferred to the company's general offices in St. Paul.

Ralph L. Heininger, onetime general traffic manager for Chicago and Southern Air Lines, has been named district traffic and sales manager of Continental Air Lines in Kansas City. He has been out of the airline industry for several years.

James G. Erwin, Jr., formerly district cargo sales manager of Milwaukee and Washington for Capital Airlines, has been named regional cargo sales manager of Capital's stations at Washington, Richmond, Norfolk, Newport News, Rocky Mount and Elizabeth City.

Peter A. De Maerel, who joined SABENA Belgian Air Lines in February after a long background in shipping, has been placed in charge of passenger and cargo traffic in New York with the title of commercial manager.

De Maerel

Robert A. Ferrarini, Friedrich Bayer and **Stephen Mayers** have joined the North American Division of KLM Royal Dutch Airlines as specialized sales representatives familiar with the problems of Italian, German and Jewish language groups, respectively.

Joseph L. Wathen, formerly station agent for Piedmont Airlines at Standiford Field, has been named traffic representative for the Louisville area; **Robert Lee Turner**, formerly station agent at Grannis Field, Fayetteville, has been named traffic representative for the Greensboro-High Point area and **Thomas L. Hogue**, formerly station agent at the Tri-City Airport, is traffic representative for the Bristol-Johnson City-Kingsport area.

Gerald Hosner, former chief agent for Continental Air Lines at Colorado Springs, has been named station manager at Las Cruces, N. M., where Continental is to inaugurate service April 1. **William R. McGovern**, station manager at Las Vegas for the past three years, has been transferred to Trinidad, Colo., another new route point. **Horace G. Hassen** has been transferred from Big Spring, Tex., to manage the new station at Raton, N. M.

Les Greening has resigned as cargo sales manager for Alaska Airlines, a post he has held five years. He expects to continue in air transportation but has not announced his future plans. He served with Pan American and with United before joining Alaska.

Dean Schwartz, formerly regional cargo sales manager for Eastern Air Lines at Chicago, has accepted a position as regional manager in that city for U. S. Airlines.

Airline Commentary

By Eric Bramley

TIPPING AT AIRPORTS is a practice against which we conducted a campaign a few years ago. We haven't touched upon it recently, but it's brought to mind by an experience of a friend of ours. This gentleman told a porter at a certain airport that he was perfectly capable of handling his own light suitcase, but nevertheless it was snatched from his hand and carried a few feet to a ticket counter. The usual hand was out for the usual tip, and when it wasn't forthcoming the porter showed, shall we say, a certain amount of displeasure. Our friend, having some time on his hands before departure and having had some similar experiences recently, decided that things had gone far enough, and steamed up to the airport manager's office to register a kick. The manager was sympathetic, but explained there was little he could do about it—porters were paid by the airlines. But he gave forth with some interesting figures. About 60,000 passengers a month were passing through his terminal, and he estimated that 40,000 of them tipped, probably a quarter. You can take these figures and make your own calculation—40,000 times a quarter equals $10,000 divided by 20 porters equals 500 bucks apiece in a month. In some places the airlines have put up signs stating that tipping is not necessary, and have provided places where incoming passengers can claim their own baggage. More widespread use of this system might help, but it isn't a complete solution, and if anyone has one, we'd like to know. But many passengers would be satisfied with even less. They'd be satisfied with an even break—if they want a porter they'll call one and expect to tip. But if they don't want one, they don't want to be blackjacked. All they want is a choice. The airlines, as employers of porters, ought to be able to arrange that. What do you think?

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A passenger stepped up to the Capital Airlines' ticket counter at Washington National Airport recently to ride to Chicago on the Constitution and continue on to San Francisco on United. In back of this passenger, as he stood at the counter, were 33 pieces of baggage which weighed in at 951 lbs. His excess baggage bill was $703, of which Capital appropriated about $250, equal to almost seven Washington-Chicago passengers. As near as we can get the story, the passenger was a government official moving some important hush-hush papers with him. Capital thinks this is one of the largest excess baggage shipments on record. Anybody know of a larger one?

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Fred Hunter reports the following from our west coast office: The rabbit population at Los Angeles International Airport has shown a marked decline recently. Used to be that 600 to 700 rabbits domiciled themselves between the runways of the airport. Now the count shows the number down to less than 100. Those who profess to be experts on the subject say the jet planes are responsible. The rabbits, they say, loved the roar of an R-2800 or an R-3350, but when an F-86 jet screams down the runway, it's a different story. The high-pitched whine is not music to rabbit ears. Some time back, a rabbit round-up was tried to rid the airport of its visitors. The rabbits were chased out at one side, but they just scampered around the corner and came back. Then it was figured that FIDO might scorch them out. But it seems that the jets, which nobody counted on, are doing the trick.

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Dorothy Stump, Northwest Airlines stewardess, figures to have more hours of flight time than any other stewardess. She's been a stewardess 14 years, starting out in 10-passenger Boeing 247's and now flying Boeing Stratocruisers. She first flew for United for a year and a half, then became NWA's first stewardess. She's flown about 3,000,000 miles, but she doesn't know how many miles she's walked up and down airplane cabins. Mary O'Connor, who is still with United, became a stewardess before Dorothy did, but Dorothy figures she has passed Mary in working hours aloft because she's been on regular schedule longer. Mary's career was interrupted by a hitch in the Navy during the war, and executive duties have taken time away from her flight log since her return to the company.

DC-6's, Converted DC-4's Raise UAL Cargo Capacity

Based on the availability of additional cargo capacity and general reductions in special commodity rates over its routes, United Air Lines is predicting a substantial increase in cargo volume during 1950. UAL is now converting four Douglas DC-4's to all-cargo planes and will soon take delivery on five new DC-6's. This will raise the daily cargo lift almost 15% to an all-time high of 675,000 pounds.

United will then be operating 11 DC-4's and 13 DC-3's as Cargoliners in addition to having shipping space available in the combination passenger-cargo Mainliners.

California PUC Finds Air Coach Rates Yield Profits

The intrastate air coach tariffs in California are "reasonable and sufficient to return operating costs and yield a profit," the State Public Utilities Commission found last fortnight at the conclusion of an investigation of the tariffs.

Principal tariffs involved were the $9.95 and $9.99 plus tax charges of intrastate carriers operating between Lockheed Air Terminal at Burbank and San Francisco/Oakland.

The PUC investigation was launched early last year after California Central Airlines initiated the $9.99 plus tax tariff for DC-3 coach service between Los Angeles and San Francisco. The commission held that such fares are not "cut rate" and do return a profit to the carriers, inasmuch as costs are less on coach type operations.

Included in the investigation, besides California Central, were Robin Charter, Inc., Air America of California, California Skycoach, Inc., Pacific Southwest Air Lines, Aero Airways, C&M Enterprises, Channel Airways, Western Air Lines of California, Robin Skyways and California Pacific Air Lines. All of these companies filed coach tariffs but not all started operating. Others started flying but later suspended operations.

CAB CALENDAR

Apr. 3—(Docket 3286 et al) Oral argument in U. S.-Alaska Service Case. 10 a. m., Room 5042, Commerce Building, Washington, D. C.

Apr. 10—(Docket 2824 et al.) Hearing in Florida-Bahamas Service Case; Mackey Air Transport et al. Tentative.

Apr. 10—(Docket 3661) Hearing in Twin Cities - Washington - Detroit - Washington Through Service Investigation. Tentative. Examiner William F. Cusick. Postponed from March 13.

Apr. 17—(Docket 4161) Hearing in enforcement proceeding against Trans American Airways, Great Lakes Airlines, Golden Airways, Edward Ware Tabor, and Sky Coach Airtravel. Tentative. Examiner Barron Fredricks.

June 19—(Docket 4290) Hearing in investigation of tariff practices of Northwest Airlines and non-certificated operations of Fly Freight, Inc., and Sterling Freightways. Tentative. Examiner Walter W. Bryan.

Civil Aeronautics Board Briefs

The Board's policy in computing mail pay under an **"automatic adjustment"** type of rate formula, where mileages may be distorted by exemption authorizations, has been set forth in a letter to the Post Office Department. The letter said that in all cases mileages resulting from operations under exemption orders are to be disregarded in favor of actual certificated point-to-point mileages. Airlines may obtain copies of the letter from Warner H. Hord, Chief of CAB's Accounting and Rates Division, Washington 25, D. C.

Wisconsin Central Airlines applied for CAB authorization to serve Janesville-Beloit, Wis., as an intermediate on its route between Madison and Chicago. Northwest Airlines, which has notified the Board it is unable to serve the points because of equipment problems, is supporting the WIS application.

CAB turned down a proposal of **Pan American World Airways** to fly nonstop between Lisbon, Portugal, and Nice, France, on the grounds that the public interest may be adversely affected. Nonstop authorizations generally are automatic after the expiration of 20 days from date of notice, and this is one of the rare cases in which the Board has taken definite action on such a notice. PAA could refile the proposal in application form, after which a public hearing would be held.

National Airlines has applied for a certificate authorizing scheduled or nonscheduled service between Miami and West Palm Beach, on the one hand, and West End, Grand Bahama Island, and Nassau, with the right to serve West End and Nassau on the same flight.

The mail pay basis in effect on **Colonial Airlines'** U. S.-Bermuda route for the past two years has been extended. The extension will result in annual mail pay compensation of approximately $362,000 for the route, or $240,000 more than Colonial would have received under a rate set on January 26, 1949, which was to have taken effect on March 1 this year.

The Board has authorized **Pioneer Air Lines** to suspend service at Las Cruces, New Mexico, coincident with the inauguration of service to that point by **Continental Air Lines**, which is tentatively set for April 1. Pioneer in requesting the suspension told CAB the traffic available is not sufficient to justify service by two carriers. It said it averaged only 24 revenue passengers per month to and from there last year.

Eastern Air Lines' certificates for Routes 5 and 6 have been amended by CAB to remove restrictions prohibiting the carrier from serving Greensboro/High Point, N. C., and Winston-Salem on the same flight. Effective date of the change is April 17.

Braniff Airways has filed a complaint charging that **American Airlines** has proposed to inaugurate an additional DC-6 nonstop service between Fort Worth-Dallas and Chicago for the "sole purpose of providing destructive and unfair competition" to Braniff. Braniff said the proposed schedule cannot be justified by existing traffic or potential demand, but that if it were not stayed it would have dire effects on Braniff. It asked for an investigation.

Western Air Lines, which has been chartering 66-passenger DC-4's to **Western Air Lines of California, Inc.**, for operation of a $9.95 air coach service between Los Angeles and San Francisco, has advised the CAB it plans to file an application under its own name for the same service that has been operated under the charter arrangement.

Awards for Continental—The Denver Advertising Club has named Continental Air Lines as winner of two "ad of the year" awards in window poster and outdoor billboard classifications. Shown displaying the winning designs are, left to right: John A. Smith, CAL's cargo sales manager; O. R. "Ted" Haueter, vice president, and Robert Bruce McWilliams, account executive and vice president of Galen E. Broyles Co. Inc., CAL's agency.

U. S. Domestic Airline Traffic for January

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR	MAIL TON-MILES **	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES REV. TRAFFIC	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
				%									
American	195,703	104,916,000	185,159,000	56.66	766,433	508,404	2,509,972	14,209,261	24,896,214	57.07	4,383,889	4,643,786	93.24
Braniff	40,112	14,079,000	30,785,000	45.73	90,866	70,276	98,709	1,608,613	3,983,691	40.38	914,344	958,553	93.63
Capital	73,932	21,974,000	52,062,000	42.21	99,158	156,928	539,528	2,899,046	6,614,838	43.83	1,447,018	1,593,878	88.12
Caribbean	5,398	441,000	1,093,000	40.35	675	. . . .	2,849	38,588	112,605	34.27	47,228	47,392	99.65
C & S	18,883	6,711,000	15,165,000	44.25	42,134	38,343	57,600	782,996	1,769,987	44.24	544,374	613,547	87.63
Colonial	9,715	2,622,000	4,776,000	54.90	6,919	4,523	6,555	282,594	614,651	45.98	226,080	265,050	83.70
Continental	12,640	4,490,000	12,865,000	34.90	16,867	6,487	23,004	476,635	1,339,519	35.58	458,919	461,280	97.99
Delta	41,461	20,251,000	42,160,000	48.03	87,620	67,530	163,498	2,272,766	5,418,308	41.95	1,191,901	1,271,763	92.54
Eastern	171,651	91,712,000	165,233,000	55.50	377,791	317,074	795,989	11,041,109	23,929,238	46.14	4,443,221	4,573,334	92.61
Hawaiian	23,358	3,053,000	4,912,000	62.15	3,892	9,354	32,527	307,332	533,897	57.56	221,351	185,755	95.18
Inland *	6,169	2,401,000	4,475,000	53.65	8,088	3,459	4,550	246,255	445,152	55.32	230,715	240,436	95.96
MCA	23,106	6,736,000	13,735,000	49.04	21,079	14,726	27,700	711,067	1,569,722	45.30	654,051	704,630	92.16
National	30,676	20,149,000	38,820,000	51.90	56,263	51,014	203,727	2,366,115	5,148,977	45.95	983,570	1,004,772	91.00
Northeast	15,938	3,049,000	8,014,000	38.05	8,364	11,420	10,521	313,150	810,638	38.63	246,766	302,028	79.44
Northwest	44,171	27,915,000	61,562,000	45.35	206,988	120,027	362,893	3,437,757	7,318,957	46.97	1,507,472	1,670,612	86.13
Trans Pac.	5,724	688,000	1,662,000	41.40	. . . .	42	1,048	58,336	147,552	39.54	59,355	47,091	94.77
TWA	86,956	59,553,000	116,471,000	51.13	593,762	338,186	897,473	7,702,177	15,323,037	50.27	3,382,249	3,783,700	87.21
United	127,313	76,721,000	144,754,000	53.00	864,769	588,935	1,650,226	10,457,935	22,605,519	46.26	3,879,627	4,267,557	89.54
Western *	29,562	10,961,000	25,031,000	43.79	52,855	29,110	38,342	1,167,477	2,594,547	45.00	610,577	607,440	87.71
TOTALS	962,468	478,422,000	928,734,000	51.51	3,306,723	2,335,838	7,426,311	60,379,209	125,177,049	48.23	25,432,707	27,242,604	90.48

* Operations of Western and its subsidiary, Inland, should be considered as consolidated, although reports are filed separately as shown here.
** Includes air parcel post.

U. S. International Airline Traffic for January

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR	U. S. MAIL TON-MILES *	FOREIGN MAIL TON-MILES	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES REV. TRAFFIC	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
				%										
American	7,069	5,628,000	9,560,000	58.87	11,459	3,489	1,027	98,144	723,479	1,211,912	59.70	203,880	182,420	100.00
Amer. O'Seas	7,415	10,032,000	18,623,000	53.87	108,972	35,852	201,236	. . . .	1,460,274	2,631,259	55.50	388,448	412,201	91.00
Braniff	1,309	2,601,000	7,577,000	34.33	2,166	936	. . . .	41,134	276,625	1,061,886	26.00	176,526	176,526	99.62
C & S	1,826	2,478,000	7,575,000	32.71	2,434	689	. . . .	38,795	298,227	908,965	32.81	184,059	184,362	99.84
Colonial	536	418,000	1,466,000	28.51	408	72	. . . .	914	46,382	215,192	21.55	33,327	37,206	89.57
Eastern	1,462	1,520,000	3,207,000	47.40	3,978	. . . .	. . . .	47,578	216,293	397,358	54.43	64,480	64,480	100.00
National	6,200	1,695,000	3,531,000	47.98	1,010	. . . .	17,178	. . . .	190,215	476,497	39.92	65,446	64,976	100.00
Northwest	2,665	5,050,000	10,688,000	47.25	150,867	16,618	3,946	322,901	1,053,334	1,709,670	61.61	440,245	465,215	94.01
Panagra	7,398	7,487,000	17,604,000	42.53	31,273	21,774	167,846	. . . .	1,034,282	2,326,413	44.46	475,781	488,584	92.31
PAA														
Latin Amer.	57,156	44,061,000	84,256,000	52.29	219,537	57,716	1,622,427	39,517	6,470,244	12,699,148	50.95	2,373,454	2,195,178	98.51
Atlantic	6,815	16,536,000	30,886,000	53.45	234,687	71,923	538,329	. . . .	2,699,481	5,227,518	51.64	880,213	968,338	90.18
Pacific	5,791	15,548,000	33,910,000	45.85	400,150	56,698	391,223	. . . .	2,440,631	5,037,415	48.45	814,196	800,823	98.38
Alaska	2,332	2,407,000	5,420,000	44.41	27,651	. . . .	248,528	. . . .	526,423	1,114,372	47.24	176,044	187,700	93.79
TWA	5,864	15,490,000	30,020,000	51.60	247,645	123,344	. . . .	. . . .	427,366	2,512,922	4,091,097	61.42	896,006	937,389	95.23
United	1,551	3,722,000	8,544,000	43.56	45,971	. . . .	. . . .	. . . .	27,171	471,056	897,796	52.47	180,000	180,000	100.00
TOTALS	115,389	134,673,000	272,869,000	49.35	1,488,208	389,051	3,191,740	1,043,520	20,419,868	40,008,498	51.03	7,352,105	7,345,398	95.84

* Includes air parcel post.

NOTE: Data in above tabulations were compiled by American Aviation Publications from monthly reports filed by the airlines with the Civil Aeronautics Board. Figures for American Airlines include that carrier's service to Mexico but not to Canada; for Braniff to South America; C & S to South America; Colonial to Bermuda; Eastern to Puerto Rico; National to Havana; Northwest to Orient, and United to Honolulu. Operations of U.S. carriers into Canada are included in domestic reports to CAB, in accordance with CAB filing procedures.

U. S. International Airline Traffic for 1949

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR	U. S. MAIL TON-MILES *	FOREIGN MAIL TON-MILES	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES REV. TRAFFIC	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
				%										
American	83,068	64,805,000	105,759,000	61.27	129,572	42,616	2,551	1,179,885	8,398,117	14,048,964	59.78	2,231,106	2,141,352	99.90
Amer. O'Seas	96,685	185,012,000	305,103,000	60.63	1,552,000	615,479	3,597,640	. . . .	25,654,438	40,640,044	63.12	7,729,776	7,545,147	95.79
Braniff	13,280	29,020,000	77,388,000	37.49	21,424	6,871	. . . .	252,405	3,084,304	11,156,790	27.64	1,675,081	1,687,003	99.05
C & S	23,481	27,327,000	83,559,000	32.70	17,365	4,655	. . . .	322,253	3,178,815	10,280,435	30.91	1,816,862	1,831,991	99.18
Colonial	12,637	9,943,000	29,434,000	33.78	10,229	1,449	. . . .	51,086	1,125,674	4,322,767	26.02	669,471	696,927	95.83
Eastern	15,012	16,039,000	37,904,000	42.31	68,789	. . . .	. . . .	621,429	2,411,463	5,393,973	44.70	799,862	759,200	98.94
National	58,612	16,664,000	32,590,000	51.13	13,442	. . . .	166,586	. . . .	2,077,527	4,935,582	42.08	707,210	688,790	98.97
Northwest	37,987	75,365,000	136,744,000	55.11	1,975,620	205,917	105,446	4,495,446	15,041,883	23,313,633	64.51	5,826,033	5,792,060	99.43
Panagra	93,944	105,968,000	201,313,000	52.63	340,405	238,981	1,623,931	265,027	14,124,324	28,234,908	50.02	5,814,756	5,855,551	97.57
PAA														
Latin Amer.	707,648	585,963,000	1,061,627,000	55.19	2,767,650	740,087	18,892,086	721,581	82,138,147	158,066,439	51.96	29,459,966	29,011,794	97.99
Atlantic	131,476	323,254,000	531,242,000	60.61	2,862,745	1,023,398	8,469,610	57,417	47,924,347	85,327,953	56.16	15,893,895	16,182,808	94.53
Pacific	85,886	242,519,000	402,682,000	60.22	5,388,162	809,504	5,904,981	. . . .	36,790,386	62,275,135	59.07	14,100,947	14,107,663	98.16
Alaska	38,488	38,271,000	73,108,000	52.34	450,604	. . . .	4,070,953	366	8,479,195	15,595,302	54.36	2,507,689	2,436,945	98.82
TWA	101,774	288,159,000	464,179,000	62.07	3,000,367	1,346,498	6,036,327	. . . .	42,157,337	65,758,415	64.10	13,824,655	13,467,954	99.12
United	26,866	64,440,000	102,655,000	62.77	765,850	. . . .	306,689	. . . .	7,823,508	11,231,624	69.65	2,410,984	2,417,037	99.37
TOTAL	1,526,844	2,072,749,000	3,647,287,000	56.83	19,364,225	5,035,475	49,376,800	7,966,895	300,409,665	540,581,964	55.57	105,468,293	104,522,422	97.63

* Includes air parcel post.

NOTE: Data in above tabulations were compiled by American Aviation Publications from monthly reports filed by the airlines with the Civil Aeronautics Board. Figures for American Airlines include that carrier's service to Mexico but not to Canada; for Braniff to South America; C & S to South America; Colonial to Bermuda; Eastern to Puerto Rico; National to Havana; Northwest to Orient, and United to Honolulu. Operations of U.S. carriers into Canada are included in domestic reports to CAB, in accordance with CAB filing procedures.

Traffic Summary for U. S. All-Cargo Airlines

Airlines	Revenue Passengers	Revenue Passenger Miles	Available Seat Miles	Passenger Load Factor	Mail Ton Miles	Express Ton Miles	Freight Ton Miles	Total Ton Miles Rev. Traffic	Available Ton Miles Flown	% Available Ton Miles Used	Revenue Plane Miles	Scheduled Miles	% Scheduled Miles Completed
October, 1949													
Fly. Tiger	....	....	....	...	....	....	942,239	942,239	1,470,858	64.08	203,999	*	*
Slick	....	....	....	...	....	....	2,209,459	2,209,459	3,195,297	69.15	606,712	723,551	86.40
US Airlines	....	....	....	...	....	....	109,121	109,121	165,495	65.93	34,711	*	*
TOTALS	....	....	....	...	....	....	3,260,819	3,260,819	4,831,650	67.48	845,422	....	...
November, 1949													
Fly. Tiger	....	....	....	...	....	....	1,273,788	1,273,788	1,855,778	68.62	272,485	283,623	95.09
Slick	....	....	....	...	....	....	2,508,336	2,508,336	3,436,537	72.97	639,588	569,905	100.00
US Airlines	....	....	....	...	....	....	149,160	149,160	232,255	64.22	47,157	78,210	84.55
TOTALS	....	....	....	...	....	....	3,931,284	3,931,284	5,524,570	71.16	959,230	931,738	97.21
December, 1949													
Fly. Tiger	....	....	....	...	....	....	1,432,774	1,432,774	1,941,022	73.82	289,993	283,623	99.73
Slick	....	....	....	...	....	....	2,663,728	2,663,728	3,748,124	71.07	653,603	630,978	78.67
US Airlines	....	....	....	...	....	....	326,889	326,889	457,860	71.39	93,640	95,744	95.44
TOTALS	....	....	....	...	....	....	4,423,391	4,423,391	6,147,006	71.95	1,037,236	1,010,345	86.13
Totals for Period from October thru December, 1949													
Fly. Tiger	....	....	....	...	....	....	3,648,801	3,648,801	5,267,658	69.26	766,477	567,246**	97.41*
Slick	....	....	....	...	....	....	7,381,523	7,381,523	10,379,958	71.11	1,899,903	1,924,434	87.88
US Airlines	....	....	....	...	....	....	585,170	585,170	855,610	68.39	175,508	173,954**	90.54*
TOTALS	....	....	....	...	....	....	11,615,494	11,615,494	16,503,226	70.38	2,841,888	2,665,634**	90.0*

* Figure not reported. ** Does not include figures for Flying Tiger and US Airlines for October which were not reported to CAB on Form 41.

NOTE: Air News began certificated operations December 14, 1949, but figures covering December operations are not available.
Flying Tiger began certificated operations October 17, 1949.
Slick Airways began certificated operations September 21, 1949, but figures covering September operations are not available.
U.S. Airlines began certificated operations October 1, 1949.

U. S. Feeder Airline Traffic for January

Airlines	Revenue Passengers	Revenue Passenger Miles	Available Seat Miles	Passenger Load Factor	Mail Ton Miles	Express Ton Miles	Freight Ton Miles	Total Ton Miles Rev. Traffic	Available Ton Miles Flown	% Available Ton Miles Used	Revenue Plane Miles	Scheduled Miles	% Scheduled Miles Completed
All American	5,367	713,000	4,342,000	16.44	3,076	6,368	...	79,287	496,320	15.98	206,800	259,824	79.54
Bonanza*	1,138	355,000	1,315,000	26.99	315	86	242	26,823	132,546	20.23	71,381	78,492	98.28
Central	257	29,000	352,000	8.24	1,227	...	...	4,015	33,912	11.84	117,341	165,296	70.99
Challenger	1,380	400,000	1,960,000	20.41	2,374	1,763	3,759	48,065	209,756	22.91	98,017	104,284	93.99
Empire	2,459	489,000	1,763,000	27.73	1,204	783	...	48,832	173,980	28.06	83,967	93,372	89.26
Mid-West	398	59,000	479,000	13.44	1,183	...	...	6,032	48,257	12.70	109,675	151,280	72.49
Monarch	1,889	478,000	2,614,000	18.30	1,803	1,447	6,970	58,306	243,245	23.97	145,221	162,192	88.83
Piedmont	6,333	1,343,000	5,266,000	25.50	3,052	3,467	4,043	139,337	601,798	23.15	250,749	273,420	91.71
Pioneer	7,841	2,190,000	7,508,000	29.17	7,523	2,812	7,074	237,386	747,137	31.77	311,307	315,965	97.63
Robinson	2,613	394,000	1,400,000	28.14	1,742	1,982	1,591	38,425	162,488	23.65	75,342	96,091	77.06
Southern	1,440	258,000	3,034,000	8.50	3,664	2,275	...	30,559	275,638	11.09	145,302	168,144	86.42
Southwest	5,937	1,130,000	3,797,000	29.76	3,473	2,160	6,983	126,159	379,596	33.24	180,674	198,356	90.13
Trans-Texas	3,230	749,000	5,108,000	14.66	3,882	2,994	3,634	85,823	346,057	24.80	243,274	256,654	94.74
Turner	390	91,000	502,000	18.03	131	447	77	8,994	52,951	16.99	26,969	32,084	72.44
West Coast	2,272	318,000	1,642,000	19.37	690	499	...	30,852	147,620	20.90	78,195	100,564	77.62
Wiggins	86	8,000	72,000	11.11	81	...	...	765	7,265	10.79	18,125	34,582	52.41
Wis. Central	2,311	353,000	1,067,000	33.08	1,862	2,157	...	37,251	109,314	34.08	134,399	185,070	72.62
TOTALS	45,341	9,357,000	42,181,000	22.18	36,722	29,260	34,373	1,006,931	4,167,880	24.14	2,296,738	2,675,670	85.38
Figures for Bonanza Air Lines for December, 1949													
Bonanza*	352	82,000	604,000	13.65	255	48	42	8,281	58,658	15.80	30,658	32,916	93.14
Helicopter Mail Service													
Hel.Air Serv.	...	....	....	...	616	...	...	616	2,487	24.76	24,035	27,341	88.27
Los Angeles	...	....	....	...	3,372	...	...	3,372	10,700	31.51	27,577	29,624	93.09

* Began operations December 19, 1949.

1949 Schedule E Reports

Schedule E reports showing calendar 1949 salaries, other compensation, and year-end stockholdings of officers and directors of certificated carriers have been filed with CAB by the following airlines:

Braniff Airways, Inc.

T. E. Braniff, dir. and pres., $28,500 salary (up $1,574.70), 279,824 of common shares; R. C. Shrader, dir. and v.p., $16,875.04 (up $177.49), 1,200 shares; Charles E. Beard, dir. and v.p., $23,000.07 (up $1,328.82), 100 shares; C. G. Adams, dir. and sec'y-treas., $16,875.04 (up $441.53), 1,900 shares; Hal C. Thurman, dir. and gen. counsel, $15,000 (down $1,005.17), 2,321 shares; John B. Walker, v.p., $11,666.76, no shares; Ferdinand Eberstadt, dir., $250 bonus and indirect compensation, 100 shares; Fred Jones, dir., $250 bonus and indir., 1,000 shares; George F. Butler, dir., $250 bonus and indir., 1,600 shares; Rose J. Whiteford, dir., $250 bonus and indir., 150 shares; Oscar W. Crane, ass't treas., $8,400 salary (up $285), 350 shares; R. L. Barrier, ass't sec'y, $7,200 (up $50), 30 shares; Whiteford, Hart, Carmody & Wilson, Washington counsel, $30,000 legal fees (up $5,000).

Los Angeles Airways

C. M. Belinn, pres. and dir., $15,000 salary (up $2,262.40), 8,425 common shares; M. J. Burke, sec'y-dir., no salary and 3,750 shares; James G. Lombardi, dir., no salary and no shares; *Earl E. Jachim, sec'y-ass't treas., $3,800 (up $3,000); Emerson B. Morgan, dir., no salary and 1,030 shares; Wayne H. Fisher, treas. and dir., no salary and 2,550 shares.

* Terminated October 15, 1949.

West Coast Airlines, Inc.

Nick Bez, pres. and dir., $6,000 salary, and 18,497½ shares common; H. A. Munter, v.p. and dir., $12,000 and 3,090 shares; William Calvert, v.p. and dir., no salary and 6,200 shares; R. A. Duwe, sec'y-treas., $6,700 salary, and 625 shares; W. A. Castleton, dir., no salary and 8,125 shares; W. A. Castleton, sec'y-treas., $1,600 salary (down $3,200); C. E. Gunderson, dir., no salary and 1,050 shares; E. K. Bishop, dir., no salary and no shares; D. K. MacDonald, dir., no salary, and 1,000 shares; George Gunn, Jr., dir., no salary and no shares; G. R. Cook, v.p., $6,400 salary (down $3,200), and 2,550 shares.

Mid-West Airlines

F. C. Anderson, pres. & treas., $8,400 salary, and 246.77 common shares; Lee P. Brennan, v.p., $3,150, and 246.77 shares; Roy Nyemaster, sec'y, no salary, and no shares.

Richmond Dedicates New Terminal at Byrd Field

By KEITH SAUNDERS

It took Virginia's capital city pretty close to a quarter of a century to get around to providing its municipal airport—Byrd Field—with a terminal building that was anything more than a wooden makeshift, but it was generally agreed that the handsome new terminal, scheduled to be officially dedicated there on April 1, was well worth waiting for.

The dedication ceremonies, one of the most ballyhooed events in recent Richmond history, drew such dignitaries as Rear Admiral Richard E. Byrd, for whom the airport is named, Senator Harry Flood Byrd, Civil Aeronautics Administrator Del Rentzel and the presidents of all of the five airlines serving Richmond.

Distinctive features of the building, which was built with city and Federal funds on a 50-50 basis, include: a spacious first floor waiting room featuring an enormous (1,365 square feet) panoramic window on the field side; another large waiting room on the second floor outside the main dining room; a sun terrace restaurant with a windbreak on the field side; ample counter space for the five airlines now serving the city, plus such others as are likely to be certificated in the foreseeable future; and a roomy control tower that was designed as an integral part of the structure and which enhances the structural lines of the building rather than sticking out like a sore thumb.

Informal Lobby

On the field side, the building opens on a concourse leading to concrete aprons which provide parking positions for six aircraft. A canopy extends the length of the building from either side of the passenger lobby, and it is under this that baggage carts are loaded and unloaded through doors leading to the various airline offices. A central baggage room at one end of the building will not be used for the time being, each airline preferring to handle its own passengers' luggage.

Upholstered divans and chairs in the two waiting rooms are arranged in family-style groupings that lend an air of coziness and informality that is lacking in so many public waiting rooms. And on the walls of the second floor lobby and the stairs leading to it are a dozen or more photo murals depicting major points of interest in the city and its environs. Fluorescent lights in ceiling insets provide adequate lighting without being at all conspicuous. The flooring is of terrazzo tile.

American Airlines, Piedmont Airlines and Capital Airlines have their ticket counters, baggage weigh-ins and operations offices ranged along a wide corridor on one side of the main lobby, while Eastern and National are on the other end. Also on the first floor is a coffee shop for passengers or visitors desiring a quick snack or refreshments, and counter space for a news and tobacco stand and other concessions.

The concessions, incidentally, were all awarded to the Union News Company, operators of the well-known Savarin restaurants, after a canvass of local firms had turned up no one able or willing to spend the $50,000 to $100,000 estimated to be required for absorbing initial operating losses and putting the food concessions on a paying basis.

The concession is strictly on a percentage basis, with the airport to receive 5% of the gross of the second floor dining room, 8% on the news, tobacco and novelty concessions, 10% on the coffee shop and 25% on weighing machines and amusement devices. The restaurant contract runs for one year, with privilege of renewal, while the other concessions are let on a five-year basis.

In addition to the waiting room, dining room and sun terrace, the second floor of the terminal has space for the air-

THIS HANDSOME brick and tile terminal building was to be dedicated April 1 at Byrd Airport, Richmond, Va., municipal airfield. Designed by Marcellus Wright and Son, the building cost $700,000, shared on a 50-50 basis by the city and the CAA. It's Richmond's first made-to-order terminal. This is how the building looks from the field side.

port manager's office and for CAA communications and Weather Bureau personnel. The CAA also has moved into the building personnel from its airports and airways sections previously quartered elsewhere on the field or in downtown Richmond. Some of these are on the third floor. The space for the Weather Bureau and airways communications is furnished free, and other space used by the government is paid for at the rate of 25c per square foot annually, with the tenants providing certain required services. The airlines pay $3.00 per square foot, which is a 100% increase over the rental paid in the temporary terminal previously used.

For the traffic controllers, the new setup is close to ideal, especially as contrasted with conditions in the old tower in the center of the airport, where there was no drinking water, no toilet facilities—virtually nothing but communications equipment. The new tower is roomy, has slanted glass sides of heat-absorbing, glare-eliminating solex glass, and has a rest room, drinking fountain and office space just a few steps down.

It is estimated the new building will cost about $25,000 more per year to operate than the old one, requiring twice as much heating fuel and more janitorial service, among other things. It is hoped, however, that the increased space fees charged airline tenants, plus increased revenues from the concessions, will more than offset this.

Courts Visitors

Col. H. K. Roberts, manager of Byrd Airport, is anxious that the field be kept self-supporting (it showed a small operating profit last year), but he is even more anxious that the people of Richmond visit the field often and in numbers and does not wish to scare them off with a "money-grabbing" policy.

It is for this reason that the large parking areas provided in front of the terminal building on either side are open to the public free of charge. An observation deck with a coin turnstile was included in the original building plans but was dropped, and the public is encouraged to come out and watch the planes land and take off, so long as they remain behind the fence.

Inside the terminal, the atmosphere is homelike and dignified, with a minimum of coin-operated devices.

"We don't want our terminal to look like a Coney Island penny arcade," said Colonel Roberts.

Richmond's new building is the first made-to-order terminal the city has had since Richard E. Byrd Flying Field was dedicated as the municipal airport in the fall of 1927. All previous ones have been wooden makeshift affairs, latest of which was a quonset-type structure erected as an interim terminal after the government returned the airport to the city in 1947.

Planning for the new terminal was started at about the same time, and the Richmond architects' firm of Marcellus Wright and Son was given the contract for designing the structure. It was their first venture into the airport terminal design field, but they came up with what Richmonders think is a highly creditable plan. The original plan was for an $800,000 structure, but when the CAA approved a Federal-aid grant offer for only $350,000, some features were eliminated from the original design so as to bring the cost of the terminal down to $700,000. No basic features had to be eliminated, however.

Richmond now has 33 airline schedules per day and is emplaning and deplaning airline passengers at a rate of about 200,000 annually. Colonel Roberts believes the new terminal, plus other improvements now in the advanced planning stage, will induce more Richmonders to turn to air travel, and this in turn will cause the airlines to give the city more and better schedules.

THIS CLOSEUP view of the center section of the new terminal building at Byrd Airport shows how the tower, one of the most modern in the country, was designed and built as an integral part of the structure. This view is from the highway side of the terminal.

Political Move Seen In Doolin Ouster

B. M. "Mike" Doolin, manager of the San Francisco Airport for the past 18 years, was dismissed from his duties by the Public Utilities Commission of the city early last month.

The move was believed to have resulted from friction developed between Doolin and the PUC, ostensibly over the system followed in rental charging for the users of airport facilities—a subject that has perennially been the center of much controversy throughout the country.

Sources close to the S. F. airport situation indicated there was political motive involved, and that the action was the outgrowth of Doolin's refusal to do a favor for a widely known California lobbyist.

Doolin was first appointed when Angelo Rossi was San Francisco's mayor. He continued in his position through the administration of Roger Lapham, and for the past two years under Mayor Elmer Robinson, who then decided the $13,200 a year job should go to somebody else.

While the PUC, which originally appointed Doolin, was established in 1932 on a non-political basis, it has been accused of becoming a political body with little interest and knowledge of the technical and business complexities of airport operations.

Doolin, who is highly respected in the aviation industry and who is currently president of the Airport Operators Council which represents large terminal-type airports throughout the country, has not disclosed his future plans.

He was succeeded at San Francisco by George M. Dixon, manager of fuel oil sales for Tidewater Associated Co. in S. F. Dixon, who was selected from 50 candidates by the PUC, is a former Navy pilot and is active in the Naval Air Reserve as commander of the Air Wing Staff 87 at Oakland Naval Air Station.

Airport People

Merle W. Hemphill has returned to CAA's Office of Airports after being loaned to the Los Angeles Airport Department to serve as general manager on a temporary basis. Appointment of a successor to **Clarence M. Young**, who resigned March 1 to assume an execu-

tive position with Pan American World Airways, has not yet been announced.

Jennings Randolph, assistant to the president of Capital Airlines, was re-elected president of the Airport Division of the American Road Builders' Association and also as treasurer of the parent group.

George E. Campbell, since last fall general sales manager of Overhaul Industries, Inc., of Long Island, will take over the duties of director of aviation at Baton Rouge, La., effective April 16. He will succeed **Col. Lewis M. Gravis**, resigned.

Joseph H. Dotterwich, a member of the Buffalo Airport Advisory Board for the past 20 years, serving under six city administrations, has been elected chairman, succeeding **John W. Van Allen**, who is no longer on the board.

Jack Thomas, who has been operating the University Airport at Wichita, Kansas, has taken over operation of the Pratt Municipal Airport.

CAA Airport Grant Offers

For the four-weeks period ended January 31, the Civil Aeronautics Administration made Federal-aid grant offers totaling $300,422 to 42 communities, as follows, with classes in parentheses:

Alaska: Seldovia Municipal (1), $48,500; Wetumpka Mun. (2), $1,400.

Arizona: Clemenceau-Cottonwood Airport (3), $15,573.

Arkansas: Bentonville Mun. (1), $15,840.

California: Adin Mun. (1), $7,374; Jackson Airport (1), $10,124; Long Beach Mun. (6), $67,256; Los Angeles International (5), $113,486; Oakland Mun. (5), $118,059.

Colorado: Denver, Stapleton Airfield (6), $9,200.

Hawaii: Kailua, Kona Airport (3), $72,000.

Illinois: Alton, Civic Memorial Airport (3), $202,000; Springfield Mun. (4), $77,300.

Kentucky: Covington, Greater Cincinnati Airport (4), $50,000; Lexington, Blue Grass Airport (3), $30,000.

Louisiana: Baton Rogue, Harding Field (5), $2,000; Opelousas, St. Landry Airport (4), $3,750.

Maryland: Baltimore, Friendship (8), $62,500.

Massachusetts: Chatham (1), $80,750; Fitchburg (3), $32,494; Pittsfield (2), $47,500.

Michigan: Freemont Mun. (1), $5,800; Monroe, Custer Airport (2), $31,600; Sebawaing (1), $10,100.

Montana: Chester (1), $4,000.

Nevada: Las Vegas, Clark Co. Airport (5), $138,239.

New York: Massena Mun. (3), $90,000.

Ohio: Chardon Mun. (1), $1,200.

Oklahoma: Canton Mun. (1), $3,180.

Oregon: Hood River, County Airport (1), $8,832; Portland (8), $1,040,281 (two projects); Salem, McNary Field (4), $24,976; The Dalles Mun. (4), $4,295.

Texas: Muleshoe Mun. (1), $1,025.

Utah: Moab (2), $6,356.

Washington: Renton Mun. (4), $5,396; Seattle-Tacoma (5), $302,898 (two projects).

West Virginia: Huntington-Ashland (3), $175,000.

Wisconsin: Cornell-Holcomb (1), $8,000; Milwaukee, Maitland Air Strip (6) $77,700.

These boosted to 1,122 the total of grant offers made under the Federal Airport Program, and increased the Federal funds involved to $100,550,805.

Airport News Digest

• **How can the aircraft acceptance rates** of existing airports be increased? The Standards Coordinating Division of CAA's Office of Airports is visiting a number of major airports in an effort to find an answer to this important question of how to get an incoming plane off the runway in the quickest possible time in order to make way for another landing or take-off. One recommendation being studied is the changing of taxiways so that they will leave runways in a sweeping curve instead of bisecting or intersecting the runways at a 90-degree angle. Better identification of taxiways, particularly for night operations, also is being studied.

• **The new hydrant refueling system** at Wheeling-Ohio County (W. Va.) Airport is attracting wide interest. Said to be the first complete installation of its type, the system consists of four conveniently located fueling stations housing two hydrants each. The stations are flush with the apron, near the normal parking position of aircraft. A **specially designed hosecart that can be attached** to the nearest hydrant refuels aircraft with minimum time and effort, eliminates the need for tank trunks or tenders, reduces airport costs and minimizes accident hazards.

• **The M. A. Gammino Construction Co.** of Providence has been awarded a $1,210,884 contract for construction of the North Central Airport, Rhode Island's second major state-sponsored airport development.

• **A Superior Court judge** has ruled that the Port of Seattle was within its rights in making an arrangement with the Yellow Cab Co. for transporting passengers from Seattle-Tacoma International Airport to the city. He denied an injunction sought by the county, which charged that the arrangement was a monopoly which excluded county-licensed taxicabs from operating out of the airport.

• **Leases are being signed** for space in the new apron building at Logan Airport, Boston, a recent signer being Trans World Airline, which took a nine-year lease. Cost to TWA will be $158,000 for the first six-year period, after which the terms will be subject to review. The building will be ready for occupancy about June.

• **An injunction suit has been filed** charging that the Rochester (N. Y.) Airport is operated in such a manner as to constitute a nuisance. This is the first of several actions planned to test the legality of the county's manner of operating the airport and the constitutionality of the airport zoning ordinance.

• **The $3,363,731 drainage and grading** project at Los Angeles International Airport, entailing the grading of nearly 12,000,000 cubic yards of earth, is expected to be completed by mid-April. Construction of the Sepulveda Boulevard underpass beneath the airport runways is the next step in the master plan.

• **Work was expected to be started** this week on the tri-state airport in Wayne County, W. Va., near Huntington.

• **Springfield (Ill.) Airport Authority** hit upon a new source of revenue this winter by throwing up dikes around an unused area near the airport administration building for flooding as an ice rink, with floodlighting installed for night use. The rink has been popular, the no-depth feature having special appeal for parents. Also, the demand of the skaters for coffee, soups and sandwiches has boosted the normally slow winter airport restaurant business.

• **Charleston (S. C.) Municipal Airport's** new $403,375 terminal building was formally dedicated February 26 . . . An $881,018 contract for construction of drainage facilities on the north side of **Houston Municipal Airport** has been let . . . **Iowa Aeronautics Commission** plans to build a landing strip near the State Fair Grounds . . . Shreveport has filed suit against owners of the last 35 acres of land needed for the new **Hollywood airport** site . . . Valuable records of the initial project at **Greater Fort Worth International Airport** were destroyed in a fire that razed the construction office . . . **Davenport's** new municipal airport at Mt. Joy is now open.

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Hydraulic Hangar Door Built From Inexpensive Scrap Parts

A hangar door which lowers from the ceiling under an air and oil pressure system can be built for as little as would be spent on a conventional sliding door. Bob Ashburn of Ashburn Flying Service, Alexandria, Va., has designed and built such a mechanism to open and close his 60 by 20 ft. hangar door.

Ashburn says that once the planes are in or out of the hangar, the door still has its uses. By closing it down on an object, it can be used as a handy press to bend pipes or press bushings in castings. It has been used as a hoist to lift a plane for maintenance work by attaching a rope to the door and raising it.

The door is unique in two features: first, since most of its components can be assembled from airport junk heaps, its estimated cost is only about $277; and second and most important, time and effort needed to open and close the 2,500-lb. door are at a minimum. The door raises in 20 seconds, closes in 15 seconds and is so braced that it cannot be banged around by personnel or by wind.

Corrugated iron covers the door, which is made of 2 x 4 lumber and strengthened with tapered cantilever 4 x 8 spars.

Uses Air Pressure

To open the door or "fold it up," Ashburn uses a rope which opens the trip on an air pressure chamber of 150-175 lbs., the type of pressure system available at most airports for cleaning engines and blowing up tires. This releases air pressure against No. 10 oil contained in an oil storage tank, which in this case is a discarded oxygen cylinder. Oil is forced from the reserve tank through piping and a one-way valve into a large cylinder, where it actuates a piston which in turn draws on five steel cables to lift the door.

The five 5/16-inch steel 6 x 7 cables run over pulleys from the door to attach to the end of the piston rod. Each cable is a separate system and any one cable is strong enough (7,000 lbs. stress) to hold the door if all of the other cables should break.

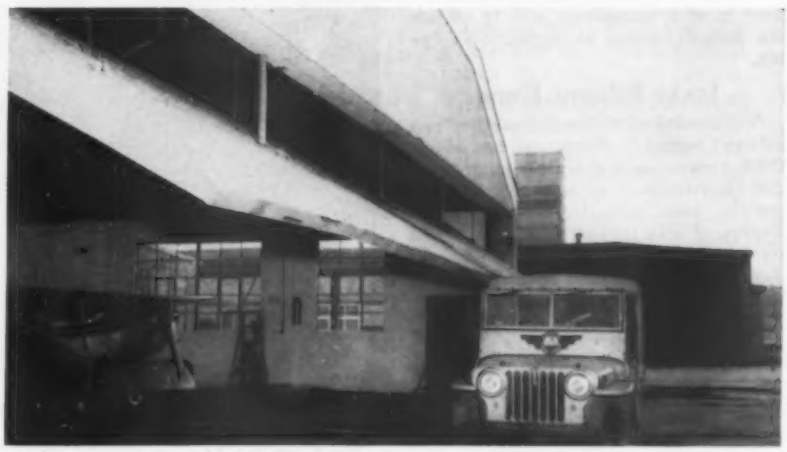
Aside from the lumber and windows, most of the material and spare parts needed to make the door are available as ordinary airport equipment or in airport junk heaps. Tin shears, a lathe, a drill press, welding torch and hammer and nails would suffice as building equipment. In Ashburn's door, the actuating cylinder was made of a piece of 5¾-in. steel pipe with cylinder "heads" secured to both ends with four bolts. The piston was made of scrap iron turned on a lathe. Building and installing the door consumed about 144 man hours of work.

Ashburn points out that he used oil in the lifting cylinder for smooth action, but it could be eliminated if desired. As it is, the door can be moved as little as 1/16 of an inch and stopped. In a year and a half of operation, the only maintenance or upkeep required on the door has been to fill the oil storage tank.

Parts & Approximate Cost

Lumber (2x4 and 2x8) ..	$75.00
Corrugated iron (scrap iron, on hand)	60.00*
Cylinder (5¾ inch tubing)	40.00
Windows	40.00
Cable (6x7)	17.00
9 pulley wheels	9.00
Piston rod (piece of cold-rolled rod)	8.00
4 water valves	8.00
Pipe guides (junk yard)	6.00
Reserve oil tank (junk yard)	4.00
Pipe and fittings (junk yard)	3.50
Angle iron and straps (junk yard)	2.00*
Track and rollers (junk yard)	2.00*
Leather washers	2.00
Piston (junk yard)	.50
Total cost	$277.00
Man hours of labor	144

* Cost estimated.



HANGAR DOOR which opens and closes by a combination of air-oil pressure was designed and constructed by Bob Ashburn of Ashburn Flying Service, Alexandria, Va. Materials from junk yards were assembled in his airport maintenance shop to make the operating system of an air pressure "trigger," oil reserve tank which was fashioned from an old oxygen tank, oil piping, a cylinder which was made of a pipe section, and an actuating piston (top). A tug on a rope will force pressure against the piston to raise or lower the 1,200 sq. ft. door in 20 seconds. Door and operating system can be constructed for $277.

1,700 Operators Use Planes For Agricultural Purposes

By KEITH SAUNDERS

Some little-known facts as to the size of agricultural aviation, some down-to-earth discussion of its problems, and reports of new equipment, new materials and new techniques came out at the Second Annual Agricultural Aviation Conference at Forth Worth, Texas, last month.

The meeting, sponsored by the National Flying Farmers Association in cooperation with the Civil Aeronautics Administration, the U. S. Department of Agriculture and other interested groups, was attended by more than 400 persons.

The gathering included about 75 aerial applicators, more than 100 farmers who do their own spraying and dusting, a good representation of equipment and materials manufacturers, and more than a score of government specialists, and everyone seemed anxious to contribute what he could to the common good as well as to obtain as much information as possible on his own individual problems.

Civil Aeronautics Administrator Del Rentzel, a luncheon speaker and an interested observer at most of the sessions, cited CAA figures to show how large agricultural aviation has grown. He said the agency's records at the end of last year showed that 1,724 operators were using 4,906 planes in crop dusting, spraying, seeding, fertilizing and defoliating; 227 companies were making spray nozzles, pumps, insecticides, fungicides and other equipment and materials used in such operations; and 19 schools are giving courses in agricultural flying.

Lacks Efficient Plane

And the industry, Rentzel said, is "just getting started." Even so, he added, CAA expects agricultural aviation to be the "bellweather" of non-airline flying for the next several years and is so impressed with its past performance and its future potentialities that it plans to devote more of its attention to this phase of aviation.

One thing that is handicapping the industry at present is the lack of a truly efficient agricultural aircraft. Planes now used for spraying and dusting were not originally designed for such operations. Nearly all of them are personal planes and trainers to which chemical hoppers, spray nozzles and other items of equipment have been added.

These adaptations, while undoubtedly ingenious in many instances, lack a lot of being efficient. They tend to waste costly chemicals, to make uneven and inadequate distribution of spraying and dusting materials, and to require more flying time than should be necessary, thereby running up costs.

The need is for a plane that is reasonable in cost, inexpensive to operate, and designed especially for characteristics that will overcome or correct the deficiencies of the planes now used for dusting, spraying, seeding and fertilizing.

Cooperative 'Queen Bee'

It is hoped that such a plane will be found in the "Queen Bee," which is the unofficial name of the experimental agricultural plane being built at the Personal Aircraft Research Center, Texas A & M College, under joint sponsorship of the CAA and the Dept. of Agriculture. Fred Weick, director of the project, told the Conference how the plane is coming and what it is expected to be like when completed.

It will be a low wing, all metal monoplane, he said, powered by a flat engine. In addition to a large hopper forward of the pilot's seat, there will be other hoppers in the wings to obtain better distribution. Preliminary designs call for a gross take-off weight of 3,000 pounds, which can be "beefed up" to about 3,400 pounds, and a load of 800 pounds that might be "stretched" to 1,200 pounds under certain conditions.

The plane will fly at 60 to 90 miles per hour when dusting or spraying, will stall at below 45 mph, will be highly maneuverable, will get on and off small strips and will be easy to load, inspect and clean. It will resemble an oversize Stearman with a tricycle landing gear.

Weick said all metal construction was decided upon because it would be easy to clean and inspect; it would require simple tooling and would have few formed metal parts, so that it could be repaired easily in the field; and the hopper could be made an integral part of the structure and fuselage.

Low Wing Type

It was decided a strong low wing would be preferable to a high wing because it: (1) would afford a better view on turns, (2) would give more protection to the pilot; (3) would provide space for additional hoppers that might make for better distribution, and (4) would provide good support for a wide landing gear.

A flat engine is preferred above a radial because it will be easier to service and will also make possible better visibility forward and down from the pilot's seat. However, the engine will be so mounted that it can be replaced, if deemed necessary or desirable, with any of the usual radial engines up to 300 horsepower.

Weick said industry help and cooper-

CAA Field Men— Aviation development assistants to CAA regional administrators met with the Aviation Development Advisory Committee and CAA Administrator D. W. Rentzel in Washington March 16 and 17. The Advisory Committee praised the men for their work in promoting personal aviation in the field and invited them to take part in future meetings. Seated (left to right) are Marshall Beeman, Sixth Region; Frank Trumbauer, Fifth Region; Harry Copeland, Second Region; and Virgil Stone, Eighth (Alaska) Region; standing are: James V. Bernardo, First Region; Wiley R. Wright, Director, Office of Aviation Development; William Berry, Fourth Region; H. P. Hill, Seventh Region, and Karl E. Voelter, Third Region.

ation is speeding completion of the project. Continental Motors Corp. has donated a 200 hp engine for installation in the experimental plane; Cessna Aircraft Corp. has given a landing gear; Vic Pastushin Industries has donated a 40-G seat; and Aeromatic and McCauley propellers have been donated to the project. In addition, Aeronca, Cessna and others have tendered engineering talent, and the CAA has been liberal in sending some of its best aeronautical engineers.

Only the fin and rudder of the ship have been completed to date, although the ailerons should soon be ready. The main part of the fuselage is in the mock-up stage and is subject to some changes when final engineering is completed. The wing presents special problems because of the hoppers that will be mounted in it, but the engineers are confident the problems will be met successfully.

Experimental Design

No one would venture a guess as to when the plane might be ready to take to the air, but the builders are shooting for late summer. The experimental plane, they cautioned, will not necessarily be a prototype from which other ships will be built. It will be strictly an experimental ship designed to test out certain design characteristics which it is believed will meet the needs of agricultural operators better than any plane now known to them.

If all of this should lead to the development of a successful agricultural airplane, or one that appears promising, attempts will be made to interest lightplane manufacturers to build a few prototypes at a figure that will cover small-lot tooling and incorporating such improvements as experience with the original experimental plane may dictate.

For their part, the manufacturers of aerial spraying and dusting devices promised the Conference that when a true agricultural plane is built they will be ready with suitable equipment for the most efficient distribution of the dusts, sprays, fertilizers, seeds and defoliants.

Ernest Hart, president of the National Agricultural Chemical Association, promised that his group would be ready with an abundant supply of the newest and most potent bug, weed and leaf killers.

And the Department of Agriculture said it hoped a model law it is now drafting for the proper regulation of the aerial applicator will be adopted by a substantial number of states within the next few years. It was agreed at the Conference that there is a need for uniform regulations which will regulate but not seriously hamper responsible aerial applicators, and that if such regulations were not soon worked out crippling and ill-advised regulations would crop up in numerous places because of the activities of a few unethical operators.

For Local Operators

Bids for AF Tech Training

About 45 bids have been received by the Air Materiel Command at Wright-Patterson AF Base, on the proposed contract training by civilian schools of USAF maintenance technicians. Deadline for submission of bids was extended to March 20, so any bids in the mail by that date will be considered. There is no definite information yet on the number of technicians who will be trained in this program, but negotiations will be completed in a few weeks.

Specifications for a civilian flight school to take over flight training at one of the four USAF basic flying schools in Texas are still being prepared. AMC says it will be another couple of months before the specs are complete and bids can be accepted.

Formula for Crash Survival

A revolutionary new airplane isn't needed to cut down the 1948 fatality rate of one death to 200 registered personal aircraft, according to Hugh De Haven, director of Cornell Crash Injury Research Institute. "Give us a lightplane with a decent structure and a speed of about 40 mph and we can design that cockpit so it can't kill a man!"

De Haven showed us the control wheels of two Swift planes demolished in recent crashes. The wheels, designed to take 1500 lbs. evenly distributed, were of metal which had bent where they had supported the pilot's chest. Neither control wheel had broken and both pilots lived. One went back and bought another Swift.

We have wondered for a long time why some people walk away from a bad crash while others die in a relatively intact cockpit. De Haven explains; "The thing that kills a pilot is the object his head strikes—such as the gyro compass or the part of the plane structure that breaks and gives back against him, maybe the engine. These are things we can do something about. We can move instruments out of the arc in which his head will swing, construct a cockpit that won't accordion, install shoulder harnesses and use control wheels to brace the body."

The energy of a crash can be gradually dispensed by landing in a grove of small trees or it could be "absorbed" by aircraft structures designed to give in sections but leave the cockpit intact. If, in addition, objects in the cockpit are of a non-lethal material, the pilot stands a good chance.

New Plane Progress Report

Contrary to previous reports, the **Jamieson Jupiter** is a long way from CAA type certification. CAA's Second Region reports that no type certification flight tests have been conducted on the aircraft and that structural tests and data are only about 50% complete. The Jamieson Aircraft Co., De Land, Fla., has estimated initial deliveries of the aircraft for next June. If so, there will have to be some fast work.

Julius Goldman, president of Revere Airways, Inc., Boston-Revere Airport has been designated New England distributor for the Jupiter. Goldman and **Ross Holdeman**, vice president of Jamieson Aircraft, were in Washington March 18 demonstrating an experimental model of the craft. Pilots who have been in the flying business for a long time were impressed with the Jupiter's performance in 45 mph gusts.

The Ercoupe, rigged with rudder pedals as a three control aircraft, is undergoing CAA certification tests at Sanders Aviation, Inc., Maryland. There is a possibility that a 1250-lb. model will be certificated for some aerobatics, although it still will be impossible to snap roll or spin the aircraft.

The Anderson-Greenwood AG-14, a two-place pusher type aircraft, is expected to receive type certification late this year. Static tests have been completed and the production flight test model is scheduled for flight in June. In addition, four production aircraft under construction are about half complete. Selling price is estimated at between $4,000 and $4,500 for a de luxe version.

Better Ground Courses Needed?

CAA Administrator Del Rentzel has stated that one way to improve flying safety is to offer thorough ground school courses in meteorology and cross country flight procedures. Such ground school courses would have the added advantage of giving the operator "a package to sell" in addition to flight time.

A similar belief that radical restrictions or requirements are not the key to safer flying was expressed in a letter to Rentzel on March 20 from **Charlie Parker**, National Aviation Trades Association executive director.

He recommended: (1) training for the private pilot license should include practical ground information and some real cross country flight experience, along the lines of the Ohio University plan; (2) nationwide airmarking be completed as soon as possible (3) consideration be given the stall warning indicator for standard installation in all new aircraft; (4) long range improvement in stall-spin and slower speed characteristics of private aircraft, plus crash consideration in cabin design; and (5) encouragement of adoption and use of the omni-range.

'Aeromart' Pays Off

Some new ideas for money-making sidelines come from **John T. Griffin**, president of the East Coast Aviation Corp., Boston (Bedford) Mass. Griffin's "Aeromart" sells transient airline passengers anything from disposable diapers to television sets—and carries 3,900 items on perpetual inventory. His maintenance shop is authorized as an automobile inspection station and carries out the bi-yearly inspections required on all cars by the state. The idea that really has a future though, he says, is repairing farm machinery. His mechanics go to the home or barn to fix everything from tractors to washing machines and he is considering getting his airport designated by manufacturers of such equipment as their official repair agency.

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• **The Veterans Administration's** recent attack on private schools through the VA and Bureau of the Budget report to the President was decried as overplaying a few isolated abuses, at the second annual Congress of Private Schools held in Washington, March 16-17. One speaker accused the VA of seeking authority to do its own dividing of the "tax pie" regardless of the rights of veterans.

• **Spain is negotiating** with Consolidated Vultee Aircraft Corp., for purchase of 44 Stinson aircraft left over from Convair's sale of the Stinson Division to Piper Aircraft Corp. Spain wants to use the planes for training.

• **Some operators who have recovered** their aircraft without realizing that Civil Air Regulation 43.10 requires removal of the second identification letter (C, R, X or L) by December 31, 1950, will be glad to know that CAA officials are considering a recommendation to extend the compliance date. The requirement that the symbol be deleted at the time of recovering or repainting aircraft was established in 1948 to give space for additional aircraft license numbers. But the compliance date will probably be extended.

• **Stanley Hiller, Jr.**, president of United Helicopters, Inc., has announced that the firm has changed its name to Hiller Helicopters. Corporate name will remain United Helicopters, Inc., but future manufacture of the Hiller 360 will be conducted under the new name in order to clearly link the company's name with its product.

—B. J. Ward

Advisory Committee Urges Increased Spin Resistance

Changes in regulations and in aircraft spin-resistant qualities may result from the meeting of the Aviation Development Advisory Committee and CAA Regional representatives with CAA Administrator D. W. Rentzel, in Washington, March 16 and 17.

The following recommendations of the Advisory Committee were adopted:

(1) That the administrator urge the weather bureau to remove weather advisory facilities from airports at which the private pilot has to pay a landing fee or set up similar facilities at nearby points where pilots will not have to pay what amounts to an "admission fee" to the weather bureau;

(2) That the practice of CAA issuing waivers for crop dusting, spraying and seeding be discontinued and that CAR 60.17c be amended so that aircraft when engaged in actual dusting, spraying, seeding, fertilizing and other agricultural flying operations, and helicopters, may be flown at less than the prescribed minimums, and

(3) that CAA continue negotiations with the industry to render planes more spin resistant by such means as stopping excessive travel of controls. Since no action on this matter has been forthcoming from the industry's association, it was recommended that CAA approach individual lightplane manufacturers on the subject.

Advertisers In This Issue

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PILOT 7 yrs. Air Force (Troop Carrier) 3000 hrs. DC3, C46, C82, C54, 1 yr. Alaskan flying. Comm. S. & ML inst. Will travel. Lt. Richard A. Young, 4th T.C. Sq., McChord Field, Tacoma, Washington.

Ferry Firm at Lock Haven

Ferry Service Company, formerly located at Wings Airport, Utica, Mich., is completely re-organized and operating under new management from Lock Haven, Pa. It handles insured deliveries of all types of aircraft to any U. S. or foreign destination accessible by land or float plane.

The company has been operating under various names since 1945 and claims a record of nearly 4,000 safe deliveries from factories to domestic and foreign buyers.

FOR SALE

RADIO SALE—BC732A Control Head for localizer receiver new in original factory box, $1.65. Flexible Tuning Shafts for receiver and ADF, 95c and up. Replacement parts for BC733, BC375, BC348, BC433, ARN7. AN connectors, aircraft wire cable, plugs, dynamotors, condensers, resisters, shock-mounts, tubes. LONG ISLAND RADIO COMPANY, 164-21 Northern Blvd., Flushing, N. Y.

WINGS OF YESTERDAY

25 Years Ago

The U.S.S. Saratoga, built to carry 72 planes for the Navy, with the most powerful engines ever put into a vessel, was launched at the New York Shipbuilding Corp. shipyard at Camden, N. J., on April 7, 1925.

•

Practically all the French airlines were using or planning to use in the near future four-engined transport planes built specially for commercial use under government support.

•

The first airplane produced by The Travel Air Manufacturing Co. was tested at Wichita, Kan. The plane, designed by Lloyd Stearman, was a tractor single-bay biplane powered with a Curtiss OX5 engine with accommodations for pilot and two passengers.

10 Years Ago

(In AMERICAN AVIATION)

Reflecting a marked increase in passenger business during the last half of 1939, domestic airlines showed a total net income of $3,138,582 for the calendar year. American and Eastern accounted for 75% of the total as American became the first line to net more than a million dollar profit.

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Twenty pioneers of the air mail service conducted by the Post Office Department from 1918 to 1927 formed the Last Man Pioneer Air Mail Club in Chicago. 600 veterans of the period were eligible for membership.

LETTERS

Spring-Top Ash Trays

To the Editor:

I enjoyed reading your En Route column in the March 1 issue of *American Aviation*. The one unhappy paragraph, aside from the rainy weather at the start, happens to fall in my bailiwick, and thought you might be interested to know that, although we can't string up the guy who invented the ash trays, we are removing them at the time the 749's go through our modification program here at the overhaul base this winter.

Should you have an opportunity to go overseas with us again sometime in the future, this annoyance will have been removed.

R. M. DUNN, Director
Engineering & Maintenance
Trans World Airline
Kansas City, Mo.

Not Yet On Record

To the Editor:

I appreciate the mention you made of National Aviation Trades Association's stand relative to the Johnson Bill and aircraft development in your March 15 issue of AMERICAN AVIATION.

Actually, while I have indicated that we are interested in this bill, NATA has not as yet gone on record as being either in favor of or against the principles of this measure.

We will advise you as soon as we have taken a positive stand on this.

CHARLES A. PARKER
Executive Director
National Aviation Trades Assn.
Washington, D. C.

En Route

(*Continued from Page* 54)

the Palatine and many other ruins, some dating back to 400 B.C. Here was the Rome of Cicero, Caesar, Virgil, Horace, Nero, Augustus, Claudius, Marcus Aurelius, Mark Anthony and countless others of that first great era which came to an end about A.D. 200. It ended because a republic had not learned how to perpetuate and protect itself. Have we in our twentieth century really learned much in the interim besides technology? The question is intriguing and is yet to be answered.

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Rounding a Corner. The night wore on and I headed back to my hotel. The crowds of the early evening had disappeared. Part way down the Via del Corso I decided to take a short-cut through some small back streets. Rounding a corner a few blocks off the main avenue I came to a magnificent fountain illuminated with spotlights. A tremendous flow of water was issuing forth with all the power and noise of a big snowfed waterfall. It was the biggest and most impressive fountain I'd ever seen. So far as I could remember, at any rate, I had never seen it before although it was but a short distance from the center of Rome. I stood fascinated and absorbed by it for some minutes.

Later I found in a guide book that this was the Fountain of Trevi, considered to be the finest in Rome, and completed in 1762. The water comes from an aqueduct dating back to 19 B.C. and which even today delivers something like 17 million gallons of water a day. The main stream of the aqueduct was delivered to this spot in 1453. I also learned that according to an old custom, travelers, on quitting Rome, take a drink from this fountain and throw a coin backwards over their heads into the basin, in the belief that their return is thus assured. I regret to report that I didn't take care of this little detail before leaving the city. When you get to Rome, seek out this fountain at night. It's worth the time and effort.

I had missed the big TWA dinner but without any regrets. Festive dinners are pretty much the same the world over. But I had found in that night of roaming a quiet and a peace that comes from reflecting upon the past.

OBITUARY

Gen. Muir S. Fairchild

Gen. Muir S. Fairchild, 55, Air Force Vice Chief of Staff, died of a heart attack on March 17. The general had served in the Air Force since 1916, when he became a flying cadet. He served as a bomber pilot in France and Italy during World War I, leaving the service temporarily after the war, but returning a few months later with a commission as a first lieutenant.

A one-time test pilot at old McCook Field (now Wright-Patterson Air Force Base) and assistant chief of the Army Air Corps, Gen. Fairchild was the founder and commandant of the Air University.

He was buried at Arlington National Cemetery March 21.

Alexander Klemin

Alexander Klemin, 61, well known in helicopter circles, died March 13 at his home in Greenwich, Conn. Klemin, aeronautical engineer and aviation writer, was president of the American Helicopter Society and rotary wing editor of "Aero Digest" magazine. He was the first director of the Daniel Guggenheim School of Aeronautics at New York University, a spot he held from 1925 until 1941.

O. L. Woodson

O. L. Woodson, 54, vice president in charge of production for the Radioplane Co., Van Nuys, Calif., died last month in Los Angeles. During the war Woodson was vice president of Bell Aircraft Corp. and managed its Marietta, Ga., plant.

IN FLIGHT

A PAGE FOR ALL PILOTS

B-45 Good for Jet Tests

THE CURRENTLY-DISCUSSED proposal to use a number of North American B-45 jet bombers for evaluation of jet transport operation has left many pilots wondering just to what extent the bomber will simulate conditions under which future jet transports must operate. The B-45's qualifications for this work may be summarized by saying it is in the right size and weight bracket and it has four engines with a representative level of fuel consumption. The engine and airframe controls are also likely to reproduce closely those of a jet transport. The take-off, climb, range and endurance at altitude, descent and landing characteristics are also favorable. The thin wing with maximum ordinate further back is also typical of the type necessary to attain cruising speeds of 500 m.p.h. economically. Two unrepresentative features are: (1) the single cockpit located rather too far aft; (2) the paired jet nacelles are too far outboard for practicing one engine taxiing to save fuel and in flight the asymmetric power characteristics will, for the same reason be more severe than they are likely to be in practice. But adding it up: the pilot who can fly a B-45 on schedule will have no trouble with the 100,000 lb. class of transport and the choice of the B-45 is therefore a most satisfactory—and indeed obvious one. All that now remains is for the legislators to go ahead and act.

Occupational Trade-Mark

That cockpit spread is not the only "occupational disease" connected with piloting, according to a Washington flight surgeon who gives CAA physical exams. Most pilots who stay with flying or shall we say, who survive, have low blood pressure. Over a period of years, this flight surgeon has observed that the old timers in the business average 100-116 blood pressure, at the bottom of the allowable CAA scale, compared with the average person's blood pressure of 110-135.

Rummaging through his files, he found the record of one old friend with 22,910 hours whose blood pressure consistently ran 100-108 over a long period of years. He was typical of the airline pilots.

The surgeon told us that another airline cohort managed to just get by the physical each year until war came and he applied for military service. Unfortunately, he had to take an Army Air Force physical, and the alarmed doctor ran a series of tests on him to determine whether or not he had been a safe pilot all these years. Every afternoon the pilot went to the doctor's office, stretched out on the cot and promptly fell asleep. The only way to get a passable reading of a hundred on him was to keep him on his feet jumping up and down. He finally passed, flew through the war and now is back on airline duty.

"Some new flight surgeon getting this pilot might have failed him," says our flight surgeon. "But knowing this guy I knew he didn't have sleeping sickness—he was just completely relaxed. That makes for low blood pressure and, I think, for a good pilot. Most of them have it."

What the Pilot Looks At

Analysis of pilot's eye movements has been a neglected aspect of flying research and the authors of the USAF Materiel Command Technical report on this subject have performed a valuable service. Some of the results can be briefly stated.

During an ILS approach the ILS pointer received 41% of the time spent looking at all the instruments, the directional gyro received 25%, the horizon 15%, the A.S.I. 10%, the manifold pressure gauge 2%, the altimeter 2%, the vertical speed indicator 2% and the turn and bank needle 1%.

The high percentage of time spent looking at the important instruments is understandable, but it is puzzling that pilots should expect to find it rewarding to spend any time at all looking at the vertical speed or the turn and bank. Pilots tend to look at all instruments instinctively and automatically and if an air temperature gauge were included no doubt this instrument, too, would have captured a small fraction of the overall time.

There would seem to be a need to cut down the number of instruments and, instead, to use some direct system of failure warning. Instruments like the oil pressure gauge should not distract the pilot's attention in cruising flight unless there is something wrong with the pressure. But the failure warning device must somehow show signs of impending failure. Most pilots want, therefore, something less distracting than a gauge and more informative than a pure failure warning light.

Flight Plans to be Required

Present CAA recommendations that private pilots flying in certain coastal areas file flight plans probably will be made mandatory in May or June.

CAA Administrator Del Rentzel has emphasized that this move is necessary for military security to permit identification of all planes using air space over critical areas. Rentzel discounted concern on the part of lightplane users that a blanket ruling would be drafted covering all of the U. S.

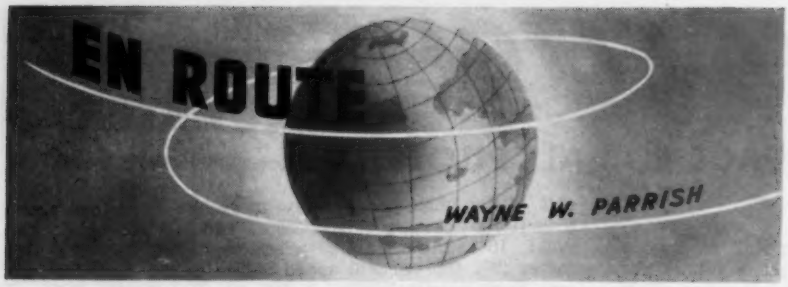
At present, the flight plan filings affect only flights at altitudes over 4,0000 feet above terrain, in the area of the Los Alamos atomic plants and the area seaward of a line 20 miles off the east coast from Norfolk, Va., north to the border. Later, defense areas will include the east and west coasts, the Canadian border and atomic plants at Hanford and Oak Ridge.

All-Weather Service

The Easton, Pa., *Star-Democrat* recently carried this chatty personal: **"Capt. Robert Mueller, First Officer William Ehler** and **Flight Agent Dan Mainwaring** of All-American Airways have been guests at the Tidewater Inn for several days due to weather conditions, and were entertained at dinner on Tuesday by Mrs. S. Stansbury Brady and Miss Patty Burnett."

Sounds like the crew members were leading a life of leisure, but the reports are that they also did some very productive work. There are a lot of well-to-do people in Easton, and the Tidewater is a popular spot. So the crew members conducted a "forum" in the hotel's reading room on airline operations and the advantages of air travel. It's understood that they made a big hit and did AAA a lot of good. (For the record, they were in Easton for the better part of two nights and three days, during a particularly bad weather period in the east).

• **Capt. Bill Bettwy** of American Airlines was delayed recently in Washington waiting for New York weather to clear so his flight could take off. He went behind the ticket counter and performed like a veteran, making hotel and train reservations, sending telegrams for passengers, and being of great assistance to the counter agents. The latter were amazed at the way he handled things. Later they discovered that Capt. Bettwy had been a counter agent long before he'd been a pilot.



Urge to Wander. Rome, Feb. 5—After the audience with the Pope I had gone with **Warren Lee Pierson**, TWA's board chairman, to the home of **Dick Mazzarrini** on the outskirts of Rome for a very fine Sunday dinner with excellent Italian dishes. Dick was with Pan American for many years before the war, in fact he had joined PAA in its earliest days. TWA picked him up after the war and currently he has two roles, one as assistant to Pierson and the other as the TWA representative on L.A.I., the Italian airline in which TWA has a 40% interest. L.A.I. not only makes money but pays dividends. Poor Mazzarrini, he's been out of the country so long he doesn't know that airlines never pay dividends!

For Sunday night, TWA had lined up another elaborate dinner and entertainment and I decided to bow out. I can eat anytime but I don't get to Rome every month or every year. I wanted to wander around by myself. There are really three Romes, the Rome of the church, the Rome of ancient history, and the modern Rome of hotels, bars, restaurants and night clubs. I sought the ancient. It was good brisk topcoat weather, just right for a long walk.

From the Excelsior Hotel I walked down the broad, winding and well-lighted Via Veneto to the bustling Piazza Barberini. The local Romans were out in large numbers going to movies and cafes and restaurants. Continuing down the Via del Tritone, one of the busiest business streets, I looked in the windows of those shops that no longer continue to pull down metal shutters over their store fronts at night and over Sundays.

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Gateway to the Past. Reaching the Via del Corso I turned left and headed toward the massive monument unveiled to Victor Emmanuel II in 1911. Its white stone was gleaming brightly from scores of spotlights. Not especially unattractive, but certainly not distinguished as architecture, this big monument is often referred to as a wedding cake. It just isn't typical of Rome and its modern lines contrast sharply with its time-worn and weather-worn surroundings.

Where trod the Romans . . . .

The Emmanuel monument, as a matter of fact, is the gateway to the past. From here the ruins of ancient Rome spread out in several directions. And in front of it, at the head of the Corso, is the Palazzo Venezia, Mussolini's palace from which he used to harangue the throngs of Fascist Italy.

I crossed the plaza until I was headed eastward down the broad and relatively new avenue called the Via del Fori Imperiale at the end of which, a quarter of a mile away, was the old Colosseum, partially illuminated, standing out like the background of a stage setting. On either side of the broad roadway the columns and arches and walls of ancient Rome rose dimly out of the darkness. The foundations of old Rome were from 15 to 20 or more feet below the street level of the Rome of today. It was all a little eerie, a little unreal.

Reflecting on the past . . . .

I didn't walk on down toward the Colosseum. A full moon was trying to break through some clouds above the horizon. I felt that I might break the sense of enchantment if I drew closer. So I climbed a few steps into an elevated park and sat down on a bench back under some trees in the shadows created by the street lamps. The city itself seemed startlingly quiet, much quieter than any American city would be. The motor traffic, mostly small European cars, moved swiftly along the avenue but the traffic noise seemed to vanish by absorption into the ancient surroundings.

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Echoing Hoofbeats. But there was one noise which stood out sharply. It was the clattering of horse-drawn carriages over the cobblestones—echoes of centuries past. I sat for a long time in the darkness looking at those stone pillars and arches and the Colosseum and thinking about this funny world we live in, of the legions of human beings who had walked along the very ground beneath me, of the hordes of Romans who had poured into the Colosseum eighteen hundred years ago to witness gladiatorial combats, of the fierce and brilliant oratory that had reverberated in those very structures now in ruins a stone's throw away, of the rise and fall of civilizations, and how transitory and insignificant we human beings are when placed before the backdrop of history.

There was a quiet sadness about it all. Whisked overnight from big, brusque, loud and brash New York in this year of 1950, I was sitting in the shadows of a once-great civilization, the silence broken mainly by the hoofbeats of horses which seemed—like the keys of a typewriter—to clatter out the stories of ancient times. How permanent the stones, how ephemeral the human being.

This was my Rome, the ancient Rome, the Rome that spawned a mighty civilization. This was the Rome that gave me a sense of humility. For is it not the past that provides depth for today's living and thinking? The real zest for living comes in the ability to measure today against yesterday. Only then can one try to measure tomorrow. On that park bench in the midst of ancient Rome, I wondered about the thoughts of those who will be looking at these same ruins a hundred or a thousand years hence. And who, indeed, will be sitting on some bench in America a thousand years hence and what will he see—ruins or what?

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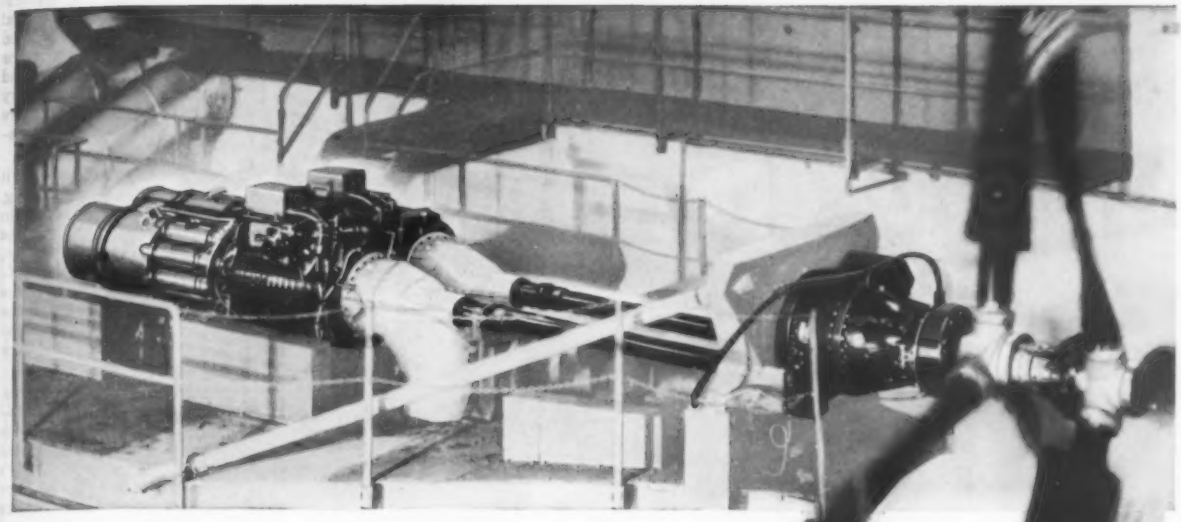
Forgotten Glories. Behind and below me were the remains of the Forum of Trajan dating from the First Century A.D., once a great structure so magnificent that the Emperor Constantius in 356 stood before it thunderstruck, "permitting his eyes to wander over the gigantic edifices, the description of which transcends the powers of speech and the like of which can never again be attempted by mortals." Towering over all was Trajan's Column, still intact eighteen hundred years later, 108 feet high and be-ribboned by a spiral band of reliefs in stone relating the stories of Trajan's wars with the Dacians in A.D. 101-102 and 105-107.

Fountain of Trevi . . . .

Down the avenue the remains of the Colosseum stood out as the perfect symbol of the greatness of Rome. Completed in A.D. 80, and seating between 40,000 and 50,000 people, it had been inaugurated by gladiatorial combats which continued for a hundred days in which five thousand wild animals were killed. In the year 405, gladiatorial combats were abolished by Honorius but wild beast fights were continued for several centuries. Sometime in the Middle Ages earthquakes reduced the massive pile to its present state.

Nearby was the Forum Romanum and

(*Turn to Page* 52)



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